Ministry of Defence

Gateway documentation:
Stage 2 DEVELOP & ASSESS

Step 2A Airspace Change Design Options
and
Design Principles Evaluation

ACP – 2023 - 022

Roles

Action	Role	Date
Produce	Airspace Change Team UAS CDC	9 Apr 2024
Review	DAATM	11 Apr 2024
Approve	Change Sponsor RAF AIR Cap	12 Apr 2024

Drafting and Publication History

Issue	Date	Change Summary
1.0	12 Apr 2024	

Contents

Introduction

The main operating base (MOB) for the large Remotely Piloted Air System (RPAS), Protector RG Mk1 is RAF Waddington, where permanent segregated airspace in the form of a Danger Area (DA) has already been established. This is EG D324 and was implemented at the end of Nov 2023.

Under current timescales, routine Protector operation is likely to commence from RAF Waddington in Summer 2024 when the MOD will conduct test and evaluation activities prior to Protector formally entering into service[1]. During this, and for future activity in the UK, Protector will require a nominated permanent diversion airfield to be made available in the event that, for any unforeseen reason, RAF Waddington becomes unavailable. Following investigation into several military airfields, RAF Marham has been identified as the most suitable and preferred diversion airfield. Whilst Protector's MOB remains RAF Waddington, there may be occasions when access to RAF Marham is required for operational reasons.

The purpose of this document is to demonstrate that the Change Sponsor has followed CAP1616 airspace change process. It forms part of the overall requirements for the Stage 2 Develop and Assess Gateway, Step 2A - Airspace Change Design Options and Design Principles Evaluation.

Executive Summary

The proposal seeks to establish suitable airspace to enable Protector RG Mk1 safe and efficient access to a nominated permanent diversion airfield, chosen as RAF Marham in Norfolk. As a result of the evaluation, the Change Sponsor decided to discount Option 1 and take only Option 2 through to the Options Appraisal.

Two airspace design options were developed by the Change Sponsor to address the Statement of Need; feedback was invited on the airspace design options from a range of identified stakeholders. Of the 115 stakeholders contacted 15 responded. Stakeholders responded with the following key themes identified:

- Five stakeholders preferred Option 2; three felt both the options were suitable; one preferred Option 1; six stakeholders did not specify a preference;
- Accessibility of the segregated airspace for other airspace users;
- Insufficient knowledgeable by Local Authorities on the subject matter to provide informed feedback;
- Level of the vertical division between the two sections in Option 2;
- Classification of the segregated airspace as Class G considered most suitable.

A design principle evaluation was completed, testing the two airspace design options against the design principles agreed in Step 1B. As a result of the evaluation, the Change Sponsor decided to discount Option 1 and take only Option 2 through to the Options Appraisal, which will be carried out in Step 2B.

[1] Access to RAF Marham as a nominated diversion airfield as early as June 2024 has been managed under an airspace trial (see ACP-2023-047 on the CAA ACP Portal) For more details see here: Airspace change proposal public view (caa.co.uk)

1 Section 1

1.1 Statement of Need (SON)

1.1.1 Version 2.0 of the SON can be viewed via the CAA ACP Portal[2] and states that the objective of the proposed change is to establish suitable airspace enabling safe and efficient access to a nominated diversion airfield for the Beyond Visual Line Of Sight (BVLOS[3]) RPAS, Protector.

1.2 Design Principles

1.2.1 Design Principles (DPs) were developed with stakeholders through Stage 1 of the ACP process to provide a shortlist of principles, which will be used to inform the development of the proposed airspace design options. The adopted DPs are at Table 1.

Table 1: ACP-2023-022 Design Principles		
Priority	Ref	Design Principle
1	DP1	The airspace change proposal must maintain a high standard of safety and should seek to enhance levels of safety, wherever possible.
2	DP2	The airspace provides access to a sufficient area to meet operational and training objectives.
3	DP5	The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.
4	DP3	The airspace design should endeavour to maximise accessibility for other airspace users.
	DP4	The airspace change proposal should consider the impacts on all airspace users.

[2]The SON can be found on the CAA ACP Portal here:
https://airspacechange.caa.co.uk/documents/download/6230

[3] The MAA Master Glossary defines BVLOS as the operation of a Remotely Piloted Aircraft beyond a distance where the Remote Pilot is able to respond to or avoid other airspace users by visual means.

2 Section 2

2.1 Stakeholder identification

2.1.1 Stage 2 of the process outlined in CAP1616 requires the Change Sponsor to test a range of airspace design options with the same stakeholders engaged with in Step 1B. The MOD selected stakeholders for the ACP from an area within a radius approximately 20 miles of RAF Marham, which is in line with the engagement catchment area for the airspace trial. A refresh of the stakeholder lists was managed by the Change Sponsor to identify any changes in personnel in organisational posts. All stakeholders previously engaged for the airspace trial have been included in all engagement activity for this ACP. Feedback received at Stage 1 that was not relevant has been captured and taken into account at this stage of the ACP (where applicable). A complete list of updated stakeholders is at Appendix A.

2.2 Engagement methods

2.2.1 The MOD conducted engagement through the following means:

Online Meetings. During the engagement activities for ACP-2023-047, an online meeting was held with the air navigation service provider (ANSP), NATS, during which early airspace design options for this ACP were also discussed.

Written communication. An email was sent with a letter containing details of the baseline scenarios and proposed design options with details of how stakeholders could provide feedback on the proposal (e.g. via a feedback response form provided, or by return of email). A reminder of the deadline for receipt of feedback was sent towards the end of the engagement period.

Face to face communication. The Change Sponsor's ACP Manager attended the East Anglia Airspace User Working Group (EAAUWG) at RAF Marham on 16 Jan 2024 and delivered a presentation containing information about the Protector programme and associated ACPs. A comprehensive brief on the ACP process was provided, including the means by which stakeholders would be able to assist with and/or influence any potential airspace design. Attendees were urged to respond formally through the forthcoming engagement opportunities. The presentation and minutes from the EAAUWG can be found at Appendix C.

2.2.2 The Change Sponsor continued with written communication as feedback was received where appropriate.

2.2.3 The formal period for stakeholders to send feedback to the engagement material was 4 Mar - 5 Apr 2024. The Change Sponsor felt this was an appropriate period due to engagement already conducted for the airspace trial.

2.3 Engagement chronology

Table 2 below details the engagement activity undertaken.

Table 2: Chronology of Engagement		
Date	Action / Stakeholders Contacted	Notes
6 Dec 2023	Online meeting held with NATS	See Appendix C for meeting record
16 Jan 2024	Presentation delivered at EAAUWG	48 attendees: See Appendix C for minutes of the EAAUWG
4 Mar 2024	Engagement material sent to all stakeholders	See Appendix C for raw data
4 Mar – 5 Apr 2024	Responding to stakeholder feedback	See Appendix C for raw data
21 Mar 2024	Reminder of deadline for feedback sent to stakeholders	See Appendix C for raw data

3 Section 3

3.1 Baseline

3.1.1 CAP1616 requires the Change Sponsor to identify baseline scenarios; future scenarios without the airspace change that are developed for the following timescales:

- Year of implementation without the airspace change proposal (year 1); and
- 10 years after implementation without the airspace change proposal (year 10).

3.1.2 Both scenarios are provided at Appendix B.

3.2 Feedback received from stakeholders (Baseline)

3.2.1 Engagement material was sent to 115 stakeholders as listed in Appendix A, which invited feedback on the baseline scenarios and design options. The raw engagement record is presented in Appendix C. Responses from eight stakeholders referenced the baseline scenarios. Following feedback, the baseline scenarios document has been updated to V2.0 at Appendix B. A summary is provided at Table 3 below.

Table 3: Feedback received from stakeholders (Baseline Scenarios)	
Response Summary	Action
10-year scenario potentially unrealistic due to developing technologies. It would be useful to assess changes and present the result applicable in the event that a full DAA capability becomes available.	Change Sponsor acknowledges and confirms this topic will be addressed in the Options Appraisal, which is Stage 2B of the Airspace Change Process
When the weather in East Anglia is suitable, gliders frequently cross to the north and east of Marham.	Change Sponsor added to Baseline Scenarios V2.0 (highlighted in green) at Appendix B.
For pipeline surveys the baseline scenarios would work fine. Pipeline surveys are conducted low-level around 600ft AGL.	Change Sponsor acknowledges – no action.
Two aircraft currently out of commission at East Winch so at return to service (approx. at commencement of the airspace trial) there will be a marginal increase in MATZ crossings and landings at this airfield.	Change Sponsor acknowledges – no action.
The Council does not feel that it has the expertise to comment.	Change Sponsor has produced a 'jargon free' overview, together with FAQs, to be made available to stakeholders at Stage 3, Consult.
The RAF Marham movements data supporting this ACP isn't entirely clear and includes non-military and non-public activity. Despite the availability of data, there is no indication in the ACP of the impact/exported risk to those having to fly around the DA.	Change Sponsor acknowledges and confirms the impact of routing outside the airspace will be addressed in the Options Appraisal, which is Stage 2B of the Airspace Change Process.
Numerous amendments were proposed to the Baseline Scenarios, some of which differed from the source data obtained from published documents; the detailed feedback is at Appendix C.	Change Sponsor added all comments to Baseline Scenarios V2.0 (highlighted in green) at Appendix B.
An AMS objective is the implementation of Free Route Airspace to as low a level as is possible. NERL would consider this viable at FL195+ and intend to implement this in	Change Sponsor has responded to the stakeholder to obtain clarification on this feedback

the future. The establishment of additional SUAs potentially undermines the efficacy of this capability and the associated benefits to operators in the vicinity e.g. Norwich Airport operations.	and will ensure it is addressed at Stage 3, Consult.

3.3 Airspace designs options

3.3.1 UK military aviation is regulated by the Military Aviation Authority (MAA). Accordingly, the Protector programme is subject to the MAA Regulatory Publications (MRP). Of particular relevance to the operation of Protector in UK airspace is MAA Regulatory Article (RA) 2320 – MAA regulation for operation of military RPAS. The RA states the criteria for BVLOS RPAS operation such that within UK airspace, BVLOS operations should only be conducted if:

- An appropriately approved Detect and Avoid (DAA) capability enables compliance with Rules of the Air appropriate to the class of airspace, or;

- They are flown using a Layered Safety Approach that specifically requires flight in Segregated Airspace, or in Controlled Airspace (Classes A-D) with the informed consent of the Air Navigation Services Provider (ANSP).

3.3.2 When Protector initially comes into service it will be fitted with a limited DAA capability only and, since RAF Marham is located entirely within Class G airspace, flight in segregated or controlled airspace is required. This will permit Protector to access RAF Marham in a safe environment, maintain regulatory compliance, and provide protection of other airspace users of any associated and identified hazardous activities. For this reason, the Change Sponsor has prepared two airspace design options which comply with the regulation above and address the SON.

3.3.3 Through continued collaboration with the air vehicle manufacturer, General Atomics – Aeronautical Systems Incorporated (GA-ASI) and RAF subject matter experts the MOD has focussed on minimising the impact of any proposed segregated airspace on other airspace users, whilst maintaining military operational objectives and operating in accordance with current regulation. The Change Sponsor sees no merit in revisiting design options that were rejected during the original ACP for RAF Waddington[4] and has proposed the same airspace designs for this permanent airspace change as those that were offered for the airspace trial this summer. Airspace design options previously considered for Protector operations, together with the rationale for those options rejected, can be found at Appendix D.

3.3.4 The MOD is presenting 2 airspace design options, both in the form of a cylinder of 5 nm radius centred on RAF Marham's Aerodrome Reference Point[5] (ARP). Both options are located directly beneath Class C airspace, which during notified hours[6] is activated as a Temporary Reserved Area (TRA). The overall vertical dimensions of both airspace design options are from surface to Flight Level (FL)195[7].

3.3.5 The airspace design options are described below.

[4] ACP-2019-18 can be found on the CAA ACP Portal here

[5] RAF Marham airfield reference point is the midpoint of RW05/23 (52 38 54.26N 000 33 02.42E)

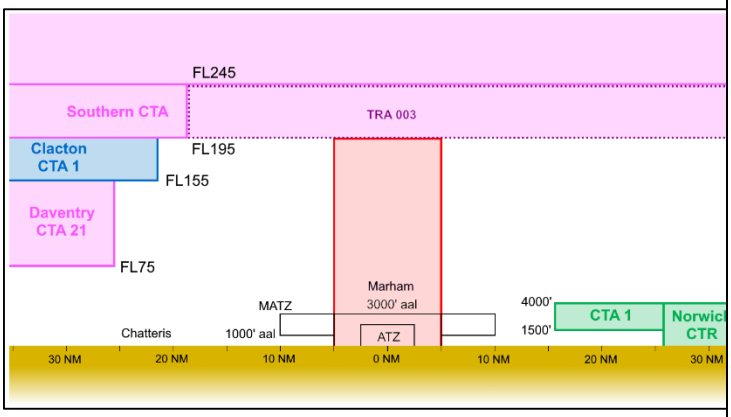
[6] Mon-Fri 0830 to 1700 UTC Winter; Mon-Fri 0730 to 1700 UTC Summer; Excluding English Public Holidays. TRA may be activated at other times by NOTAM.

[7] A Flight Level (FL) is used to ensure that all aircraft are flying to a common datum to ensure height separation is maintained (1 Flight Level = approximately 100 ft, eg FL 195 = approximately 19,500 ft).

Option 1.

Depicted below, Option 1 is a single volume of airspace of 5 nm radius centred on RAF Marham's ARP. The vertical dimensions are from surface to FL195.

<table>
<tr><th colspan="2">Option 1: Year of Implementation (Year 1)</th></tr>
<tr><td> 

Source data: CAA VFR Aeronautical Chart 1:500K</td><td> 

SW/NE Cross-section</td></tr>
<tr><td>Lateral Dimension: 5 nm radius circle centred on RAF Marham's ARP</td><td>Vertical Dimension: Surface to FL195.</td></tr>
<tr><td colspan="2">Option 1: 10 Years After Implementation

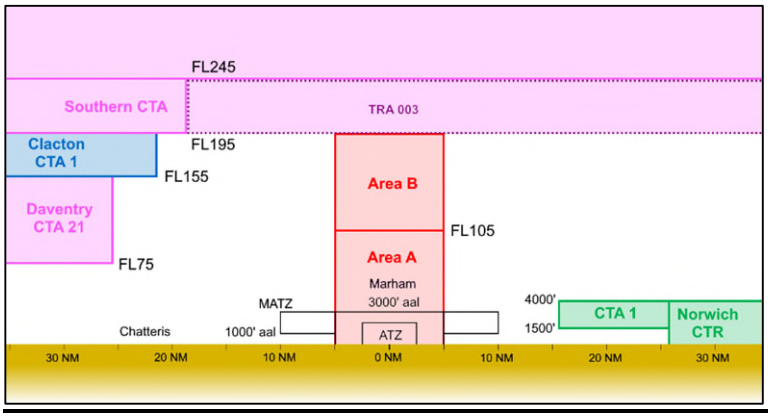
Lateral dimensions of the airspace are expected to be unchanged. However, Protector may be fitted with the full suite of DAA equipment, thus potentially enabling a reduction to the upper limit of the airspace.</td></tr>
</table>

Option 2.

As shown below, Airspace Design Option 2 comprises two volumes of airspace, both of 5 nm radius centred on RAF Marham's ARP. Area A is from surface to FL105[8]; Area B is FL105 – FL195.

Option 2

Source data: CAA VFR Aeronautical Chart 1:500K



SW/NE Cross-section with internal vertical division

Lateral Dimension: 5 nm radius circle centred on RAF Marham's (ARP)	**Vertical Dimension**: Area A Surface to FL105 Area B FL105 - FL195.

Option 2 + 10 Years
Lateral dimensions of the airspace are expected to be unchanged. However, Protector may be fitted with the full suite of DAA equipment, thus potentially enabling a reduction to the upper limit of the airspace and removing the requirement for two separate internal sections.

3.4 Type of Airspace

3.4.1 RAF Marham sits entirely within Class G airspace, which does not provide adequate segregation for Protector without a full DAA capability. Consideration has been given to the most appropriate type of airspace to accommodate Protector activities; a precis follows and is then further summarised in Table 4 below.

3.4.2 In broad terms, civil and military regulations specify that without an appropriately approved DAA capability, Protector must be flown using a Layered Safety Approach that specifically requires flight in segregated airspace. Protector is fitted with TCAS II, which may be approved to provide a DAA capability in airspace where all traffic can be expected to be operating a transponder (i.e. transponder-mandatory airspace). The MOD is producing an Airspace Integration Safety Argument (AISA) for the introduction of Protector into UK airspace. This work aims to develop an evidenced argument for the safe operation of Protector under Instrument Flight Rules (IFR) and under an air traffic service within transponder-mandatory airspace, as well as in suitable segregated airspace.

[8] The level of the division in the airspace has been selected to mimic the division in EG D324 at RAF Waddington.

Table 4 - Proposed Airspace Types for Consideration with MOD Comment		
Type of segregated airspace	Suitability for Protector	MOD Comment
Classes A & C Class D above FL100 or if below FL100 is also a TMZ[9]	Yes	These classes of airspace are not justifiable by the Change Sponsor in terms of: Restrictions placed on other airspace users; Air traffic management resourcing; Flexible use of airspace (notified hours of activation in UK AIP).
Class E	Unknown	Pending AISA for Protector, but thought unlikely to be suitable.
Class G Danger Area	Yes	Less impact on other airspace users since it can be tactically managed (does not have notified hours of activation in UK AIP)
TMZ/RMZ	Possibly	Not being considered for same reasons as noted above for Classes A, C and D,

3.4.3 It is envisaged, therefore, that the most economical type of airspace to be implemented (in terms of hours of activation, access to airspace and staffing resource) would be segregated airspace in the form of a Danger Area.

3.5 Measures to Minimise the Impact on other Airspace Users

3.5.1 The type of airspace implemented will drive the overall hours of airspace activation. As suggested above, the implementation of segregated airspace in the form of a DA will provide the most efficient and tactical use of airspace, since the MOD will be able to activate the airspace structures only as and when necessary.

3.5.2 The proposed airspace will not be permanently active; it will only be activated when Protector flying is due to take place (either from RAF Waddington or on departure from RAF Marham). Procedures will be adopted to ensure that the airspace is activated and notified only as and when required. This will involve appropriate Notice To Aviation (NOTAM) action being taken at D-1[10]. To ensure minimum disruption to other airspace users a Special Use Airspace Crossing Service (SUACS) will be offered within all implemented airspace. This means that, even if the airspace has been notified as being active, it may be possible for both civil and military aircraft to transit through it under a clearance from either RAF Marham or other ATC agencies.

3.5.3 Information on the status of the airspace will be available, including a Special Use Airspace Activity Information Service (SUAAIS), via appropriate military ATC units.

3.6 Utilisation of Airspace

3.6.1 The Change Sponsor anticipates that during the first 6 months of Protector's service in the RAF, the flying tempo will be restricted to one air vehicle at a time during core flying hours Monday – Friday. This is likely to occur up to 3 times per week. It is difficult to predict when the flying tempo will significantly increase, but potentially within the first 24 months of service there may be up to two air vehicles in the air simultaneously. Some night flying is expected. Should there be an update on the planned utilisation of the DA; the Change Sponsor will promulgate this information to Stakeholders at Stage 3, Consult**.**

3.7 Feedback received from stakeholders (Design Options)

3.7.1 Engagement material was sent to 115 stakeholders as listed in Appendix A. Responses from 15 stakeholders were received.

[9] TMZ = Transponder Mandatory Zone.

[10] D-1 means that the NOTAM must be requested the day before the airspace is to be activated.

3.7.2 The raw engagement record Appendix C. Analysis of the 15 responses containing feedback on the airspace design options identified a number of key themes from the issues raised and are summarised in Table 5 below.

Table 5: Stakeholder Feedback, Key Themes (Design Options)		
Theme	Description	Change Sponsor Comments
Airspace design	Altering the size/shape of the cylinder to maintain uninterrupted access to local airfields	The radius of the airspace has been pared down to 5 nm following close work with the aircraft's manufacturer and in-Service personnel. The air system was developed originally to operate in airspace of 6 nm radius to accommodate its automatic take-off and landing capability[11] (ATLC). At RAF Waddington, specific amendment to this has been accomplished to manage the ATLC within 5 nm radius, whilst assuring safe operation. Any further reduction in the radius is not viable. In addition, the air vehicle will need to use the main runway at RAF Marham in both directions, so offsetting the airspace is not possible.
Classification of airspace	7 stakeholders commented. All agreed Class G was most suitable.	N/A
Duration that airspace users may be held outside the DA when Protector is utilising; and prompt deactivation of the airspace.	Stakeholders were keen to understand how long they may be unable to access the airspace at any one time. Minimising activation in the lower section is desirable; ideally, only when an actual Protector diversion is underway or for a planned currency diversion.	Prompt deactivation was a condition set by the CAA for the DA established at RAF Waddington (EG D324), and also for the TDA that will be in place over RAF Marham in Summer 2024. It is anticipated that it will be a stipulation for this DA also. The airspace trial scheduled for Summer 2024 will collect accurate climb and decent rates for Protector to determine potential utilisation periods.
Access to the airspace	Access for Cat A priority flights	Normal procedures as per UK regulation will be in place for Cat A and B flights to gain access to the DA. Similar procedures will be afforded non-Cat A & B flights (national services e.g. pipeline, powerline inspections) to enable access when safe to do so.

[11] The Protector air system is equipped with an Automatic Take-Off and Landing Capability (ATLC) which means that Protector will follow pre-determined flight profiles for the initial departure and final approach phases of flight.

Table 5: Stakeholder Feedback, Key Themes (Design Options)		
Theme	Description	Change Sponsor Comments
	A SUACS to be available at all times it is NOTAM'd as active and not utilised as a way of preventing MATZ transit.	A SUACS will be available at all times the airspace is active.
	RAF Marham to remain usable as a booked diversion and procedures be put in place to enable both activities.	Protector ops will not preclude use of RAF Marham as a diversion.
	Letter of Agreement (LOA) or shared procedures developed to allow Lakenheath ATSU to continue to operate when the proposed area is active/cold.	The MOD is currently working to engage with Lakenheath in the development of a LOA.
Impact/imported risk	Potential risk that implementation of a DA will influence airspace users to avoid and thus create more congestion in areas outside RAF Marham airspace.	To be addressed in the Options Appraisal, which is Stage 2B of the ACP.
Height of vertical division in Option 2	Stakeholders suggested consideration is given to the division height: Lower height to increase capacity for GA transits; Higher height to accommodate F-35B practice flame out procedures in the lower section whilst Protector holds in the section above; Potential for a 3-tiered area rather than 2.	The airspace trial scheduled for Summer 2024 will provide an indication of the typical duration for Protector's occupation of Areas A & B. The Change Sponsor recognises the balance to be struck between hold times for civil aircraft versus operational ability for military aircraft. To ensure all airspace user requirements are considered, the internal division of the airspace construct will be a topic for further engagement at Stage 3 of the ACP.
Additional Feedback	2 non-aviation stakeholders felt they did not have the expertise to comment on the ACP.	Change Sponsor has produced a 'jargon free' overview, together with FAQs, to be made available to stakeholders at Stage 3, Consult.
	Separate consultations for ACP-2023-022 and ACP-2019-018.	The Change Sponsor is aware that the running of various separate ACPs in support of Protector's integration into UK airspace has not been ideal. Whilst it was originally thought that segregated airspace at a permanent diversion aerodrome would not be required, the MOD has latterly assessed it as a necessity. The delay in commencing the Marham ACP has been primarily created by the time taken to complete a scoping study to identify the most suitable diversion aerodrome, hence the

Table 5: Stakeholder Feedback, Key Themes (Design Options)		
Theme	Description	Change Sponsor Comments
		inability to run any concurrent consultations.
	[redacted]	[redacted]

3.8 Stakeholders Preferred Option.

3.8.1 One non-aviation stakeholder expressed a preference for Option 1, reasoning that RAF Marham airspace is not excessively busy, nor is it envisaged that the diversion airfield for Protector would be used frequently enough to warrant increasing the risk with Option 2 by having (potentially armed) aircraft either below or above the RPAS. Five preferred Option 2 due to flexibility and minimising the volume of airspace at any given time. Three stakeholders selected either option as suitable; these were from gliding and rotary stakeholders for whom the access and DA height limitations were less of a concern. Six stakeholders did not express a preference for Option 1 or two.

3.9 Feedback out of scope.

3.9.1 The Change Sponsor received the feedback from one stakeholder deemed out of scope for Stage 2, summarised below[12]:

- CAA policy necessitates segregated airspace, contradicting the intent of the UK Airspace Modernisation Strategy (AMS). The proliferation of SUA structures affects the wider network and undermines sustainability ambitions. Increased access to other areas/airfields could conflict with AMS implementation. Controlled airspace might provide an integration solution.

- CAA policy requires military uncrewed, non-DAA, and civil crewed aircraft from operating in TRAs although TRAs are not segregated. Increasing non-DAA RPAS will exacerbate these challenges.

3.10 Feedback applicable from Stage 1.

3.10.1 There were responses received from eight stakeholders that contained queries or suggestions out of scope in terms of addressing the suitability of the DPs at Stage 1 of the ACP. Those assessed as pertinent to Stage 2 are encompassed within Table 5[13] and are listed below:

- A request for information on the impact on the local public as a result of the airspace;

[12] The Change Sponsor has requested clarification from the stakeholder on the second comment.

[13] Stakeholders that submitted feedback out of cope for Stage 1 were the same stakeholders that submitted comments on the same theme at Stage 2.

(*access to the airspace*)

- Objection to the way the MOD has implemented an ACP separate to the recently established, operationally linked, DA at the MOB, RAF Waddington (*separate consultations*).

- A request for airspace to revert to Class G when not in use (*classification of airspace and prompt deactivation of airspace*).

4 Section 4

4.1 Design principle evaluation

4.1.1 The Change Sponsor has developed 2 design options to address the SON and to align with the DPs as agreed and presented in the engagement letter. The design options have been further evaluated against the DPs. The baseline scenarios at year 1 and year 10 are included in the evaluation for this submission. The evaluation is below, split over Tables 6 - 9.

Table 6: Design Principle Evaluation		Baseline: Year 1	
Option Name: Baseline– Year 1		~~ACCEPT~~ / REJECT	
No change to current airspace scenario; airspace situation as per Year 1 Baseline			
Design Principle 1: The airspace change proposal must maintain a high standard of safety and should seek to enhance levels of safety, wherever possible.	NOT MET	PARTIAL	MET
No change to the current airspace means that the safety levels of the current airspace would be maintained.			
Design Principle 2: The airspace provides access to a sufficient area to meet operational and training objectives.	NOT MET	PARTIAL	MET
Should the proposed airspace not be put into place, Protector RPAS would be significantly restricted in its ability to operate outside EG D324 (at RAF Waddington), thus not meeting its operational/training objectives.			
Design Principle 5: The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.	NOT MET	PARTIAL	MET
Current airspace situation is not inconsistent with relevant legislation.			
Design Principle 3: The airspace design should endeavour to maximise accessibility for other airspace users.	NOT MET	PARTIAL	MET
The current airspace situation does not restrict access for other airspace users as it is a Class G environment.			
Design Principle 4: The airspace change proposal should consider the impacts on all airspace users.	NOT MET	PARTIAL	MET
The current airspace situation has a neutral impact on most airspace users. However it would not provide the airspace that is required for Protector operations			

Table 7: Design Principle Evaluation		Baseline: Year 10	
Option Name: Baseline – Year 10		~~ACCEPT~~ / REJECT	
No change to current airspace scenario; airspace situation as per Year 10 Baseline			
Design Principle 1: The airspace change proposal must maintain a high standard of safety and should seek to enhance levels of safety, wherever possible.	NOT MET	PARTIAL	MET
No change to the current airspace means that the safety levels of the current airspace would be maintained. The Change Sponsor is unaware of any significant changes at year 10 that may impact the evolution of this DP.			
Design Principle 2: The airspace provides access to a sufficient area to meet operational and training objectives.	NOT MET	PARTIAL	MET
Should the proposed airspace not be put into place, Protector RPAS would be significantly restricted in its ability to operate outside EG D324 (at RAF Waddington), thus not meeting its operational/training objectives. There is potential that Protector may be equipped with the full suite of DAA, therefore it may be possible that the upper limit of the airspace is reduced.			
Design Principle 5: The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.	NOT MET	PARTIAL	MET
Current airspace situation is not inconsistent with relevant legislation.			
Design Principle 3: The airspace design should endeavour to maximise accessibility for other airspace users.	NOT MET	PARTIAL	MET
The current airspace situation does not restrict access for other airspace users as it is a Class G environment. The Change Sponsor is unaware of any significant changes at year 10 that may impact the evaluation of this DP.			
Design Principle 4: The airspace change proposal should consider the impacts on all airspace users.	NOT MET	PARTIAL	MET
The current airspace situation has a neutral impact on most airspace users. However, it would not provide the airspace that is required for Protector operations. There is potential that Protector may be equipped with the full suite of DAA, therefore it may be possible that the upper limit of the airspace is reduced.			

Table 8: Design Principle Evaluation		Option 1	
Option Name: Option 1		~~ACCEPT~~ / REJECT	
5 nm radius circle centred on RAF Marham's ARP. Surface to FL195.			
Design Principle 1: The airspace change proposal must maintain a high standard of safety and should seek to enhance levels of safety, wherever possible.	NOT MET	PARTIAL	MET
Option 1 maintains a high level of safety, ensuring necessary segregated airspace to facilitate Protector arrival and departure operations to/from RAF Marham.			
Design Principle 2: The airspace provides access to a sufficient area to meet operational and training objectives.	NOT MET	PARTIAL	MET
The proposed airspace dimensions have been designed to provide an adequate area for Protector to carry out its pre-determined flight profiles for the initial departure and final approach phases of flight as well as providing access from/to controlled airspace for transit.			
Design Principle 5: The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.	NOT MET	PARTIAL	MET
The proposed airspace design is compatible with current legislation and the airspace modernisation strategy in the facilitation of access by other airspace users when it is not occupied by Protector.			
Design Principle 3: The airspace design should endeavour to maximise accessibility for other airspace users.	NOT MET	PARTIAL	MET
This option would be activated by NOTAM and a SUACS would be provided to aircraft when the DA is active, thus facilitating use of the airspace when it is not occupied by Protector. Other airspace users may be required to hold outside the DA until Protector has vacated the airspace, potentially for a longer period than that at Option 2.			
Design Principle 4: The airspace change proposal should consider the impacts on all airspace users.	NOT MET	PARTIAL	MET
The proposed airspace takes into account the requirements of a broad spectrum of airspace users, including emergency operators, gliders, private/leisure aircraft, commercial operators and military stakeholders. The dimensions, airspace classification, and crossing service have all been considered to minimise disruption to other operators.			

Table 9 - Design Principle Evaluation		Option 2	
Option Name: Option 2		ACCEPT / ~~REJECT~~	
5 nm radius circle centred on RAF Marham's ARP. Area A Surface to FL105. Area B FL105 - FL195.			
Design Principle 1: The airspace change proposal must maintain a high standard of safety and should seek to enhance levels of safety, wherever possible.	NOT MET	PARTIAL	MET
Option 2 maintains a high level of safety, ensuring necessary segregated airspace to facilitate Protector arrival and departure operations to/from RAF Marham.			
Design Principle 2: The airspace provides access to a sufficient area to meet operational and training objectives.	NOT MET	PARTIAL	MET
The proposed airspace dimensions have been designed to provide an adequate area for Protector to carry out Its pre-determined flight profiles for the initial departure and final approach phases of flight as well as providing access from/to controlled airspace for transit.			
Design Principle 5: The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.	NOT MET	PARTIAL	MET
The proposed airspace design is compatible with current legislation and the airspace modernisation strategy in the facilitation of access by other airspace users when it is not occupied by Protector. Division of the overall volume into Area A & B is in accordance with Flexible Use of Airspace (FUA).			
Design Principle 3: The airspace design should endeavour to maximise accessibility for other airspace users.	NOT MET	PARTIAL	MET
This option would be activated by NOTAM and a SUACS would be provided to aircraft when the DA is active, Option 2, enables the proposed airspace to be managed to minimise the impact on other airspace users. Each area is able to be managed independently. The addition of the split aims to reduce holding times for aircraft wishing to cross the proposed airspace and those which operate to/from airfields situated within the airspace.			
Design Principle 4: The airspace change proposal should consider the impacts on all airspace users.	NOT MET	PARTIAL	MET
The proposed airspace takes into account the requirements of a broad spectrum of airspace users, including emergency operators, gliders, private/leisure aircraft, commercial operators and military stakeholders. The dimensions, airspace classification, and crossing service have all been considered to minimise disruption to other operators.			

4.2 Summary DP Evaluation

4.2.1 The Baseline options at year 1 and year 10 do not meet DPs 2 and 6; crucially, they do not enable Protector operations outside EG D324 (at RAF Waddington), thus not meeting the SON or its operational/training objectives.

4.2.2 Options 1 and 2 are both viable design options. Option 1 meets all DPs except DP3. DP3 is only partially met as whilst the design endeavours to maximise accessibility for other airspace users in the application of a SUACS, airspace users may encounter longer holding times or the need to reroute should any part of the airspace be occupied by Protector. However, the vertical division of the airspace at Option 2 enables a more efficient means of access to other airspace users and, therefore, Option 2 meets all the DPs.

Based on the DP Evaluation and stakeholder feedback received, the Change Sponsor has decided Option 1 will be discounted and only Option 2 will be taken through to the Options Appraisal.

5 Section 5

5.1 Next steps in this proposal

5.1.1 This document will be submitted to the CAA as evidence to support the ACP-2023-022 Stage 2A.

5.1.2 It is part of the documentary evidence for the Stage 2 Assessment Gateway (CAA's Assessment Gateway scheduled for 26 Apr 2024).

5.1.3 The following CAP1616 timeline is anticipated:

Gateway Event as per CAP 1616	Planned Date
Stage 3 - Consult	31 May 2024
Stage 4 - Update and Submit	23 Sep 2024
Stage 5 - Decide	13 Jan 2025
Stage 6 - Implement	17 Apr 2025

5.2 References

A. ACP-2023-022 Airspace Design Options Engagement Letter V1.0 Dated 4 Mar 2024

Appendix A - ACP-2023-022: Stakeholder List

NATMAC Members			
Serial	Organisation	Representative/s	Email Contact
N1	Airlines UK	[redacted]	
N2	Airport Operators Association (AOA)		
N3	Airfield Operators Group (AOG)		
N4	Aircraft Owners and Pilots Association (AOPA)		
N5	Airspace Change Organising Group (ACOG)		
N6	Association of Remotely Piloted Aircraft Systems UK (ARPAS-UK)		
N7	Aviation Environment Federation (AEF)		
N8	British Airways (BA)		
N9	BAe Systems		
N10	British Airline Pilots Association (BALPA)		
N11	British Balloon and Airship Club		
N12	British Business and General Aviation Association (BBGA)		
N13	British Gliding Association (BGA)		
N14	British Helicopter Association (BHA)		
N15	British Microlight Aircraft Association (BMAA)		
N16	British Skydiving		
N17	Drone Major		
N18	General Aviation Alliance (GAA)		
N19	Guild of Air Traffic Control Officers (GATCO)		
N20	Honourable Company of Air Pilots (HCAP)		
N21	Helicopter Club of Great Britain (HCGB)		
N22	Isle of Man CAA		
N23	Light Aircraft Association (LAA)		
N24	Low Fare Airlines		
N25	Military Aviation Authority (MAA)		
N26	Ministry of Defence - Defence Airspace and Air		

	Traffic Management (MoD DAATM)		
N27	NATS	[redacted]	
N28	Navy Command HQ		
N29	PPL/IR (Europe)		
N30	UK Airprox Board (UKAB)		
N31	UK Flight Safety Committee (UKFSC)		
N32	United States Visiting Forces (USVF), HQ United States Country Rep-UK (HQ USCR-UK).		

Local Authority Stakeholders			
Serial	Name/Organisation	Rep	Contact Details
A1	Norfolk County Council	Planning Dept Chair	[redacted]
A2	Kings Lynn and West Norfolk District Council	Airfield Wards	
A3	Breckland District Council		
A4	Marham Parish Council		
A5	Boughton Parish Council		
A6	MP for SW Norfolk	Liz Truss	
A7	Barton Bendish Parish Council		
A8	Shouldham Parish Council		
A9	Fincham Parish Council		
A10	Narborough Parish Council		
A11	The Wash and North Norfolk Marine Partnership	Adele Powell	
A12	Environment Agency		
A13	Natural England		
A14	County Land and Business Association		
A15	Campaign to Protect Rural England (CPRE)		
A16	County Land and Business Association		
A17	Campaign to Protect Rural England (CPRE)		
A18	Police and Crime Commissioner for Norfolk		

A19	Wash & Norfolk Conservation	Edward Tooth	[redacted]
A20	Shouldham Parish Council		

Local Aviation Stakeholders			
Serial	Name/ Organisation	Representative	Contact Details
L1	[redacted]	Cambridge Airport	[redacted]
L2		Airprox Board	
L3		Boughton North	
L4		Boughton South	
L5			
L6			
L7			
L8			
L9			
L10			
L11			
L12		Cambridge Airport	
L13			
L14			
L15		Cambridge Gliding	
L16			
L17		Chatteris	
L18			
L19		Drone Trg	
L20			
L21		Duxford	
L22		East Anglia Air Ambulance	
L23			
L24			
L25			
L26		East Winch	
L27			
L28			
L29			
L30		Felthorpe Airfield	
L31			
L32			
L33			
L34		Fenland Airfield	
L35		Fenland Flying School	
L36		Ferfield Airfield	
L37		Fersfield Flying Club	
L38		Fersfield Flying Group	
L39		GasCo	
L40		Ludham Airfield	
L41			
L42		Mcaully Flying Group	
L43		Norfolk Gliding Club	

L44	[redacted]	Norwich Aiport	[redacted]
L45			
L46			
L47			
L48			
L49		Old Buckenham Airfield	
L50		Osprey	
L51		priory Farm Tibenham	
L52			
L53			
L54			
L55			
L56		Seething	
L57		UAV Norwich Police	

Other Aviation Stakeholders		
Serial	Name/Organisation	Contact Details
O1	Helicentre Aviation (Pipeline Inspection)	[redacted]
O2	Heli Air (Pipeline inspection)	
O3	PDG Helicopters	
O4	National Grid (Powerline inspection)	
O5	Drone Wars - [redacted]	
O6	Fly Cromer	

Appendix B – ACP-2023-022 - Baseline Scenarios V2.0

1. Context.

1.1. Year of implementation

1.1.1. RAF Marham sits within class G airspace, which does not provide adequate protection or segregation for the equipment configuration of Protector. Civil[1] and military[2] regulations specify that without an appropriately approved Detect And Avoid (DAA) capability to enable compliance with the Rules of the Air appropriate to the class of airspace, Protector must be flown using a Layered Safety Approach that specifically requires flight in segregated airspace. Protector does not currently have an appropriately approved DAA appropriate to Class G airspace and therefore, is unable to access the airspace above and around RAF Marham. A map of the local area is at Figure 1.

1.2. Year 10

1.2.1. As the Protector programme progresses, it is anticipated that there would be advances in technology permitting the development and instalment of an appropriate DAA system on the airframe within the next 10 years. Should this be the case, then the required airspace would either be significantly reduced or negated.

2. Structures routes, procedures and behaviours.

2.1. Year of implementation

- RAF Marham Air Traffic Zone (ATZ) is a circle 2·5 nm radius centred on Marham's aerodrome reference point (ARP), notified from surface to 2000ft Above Aerodrome Level (AAL). The Military Air Traffic Zone (MATZ) is a circle 5 nm radius centred on Marham's ARP and is notified from surface to 3000ft AAL. Pilots must call Marham Zone on frequency to obtain permission to enter the ATZ. No reply on the Zone frequency will indicate that Marham MATZ can be crossed but pilots must continue to avoid the ATZ unless operating in accordance with previously agreed procedures. Marham Zone is activated in order to protect operational flying and so aligns with its military flying requirements; all opening hours are routinely promulgated via a Notice To Aviation (NOTAM).

2.1.1. Directly above and surrounding RAF Marham the airspace is Class G up to Flight Level FL195; Class C extends from FL195 upwards. During specified hours, the airspace is activated as a Temporary Reserved Area (TRA 003). Although the background classification between FL195 and FL245 is Class C, to avoid operational restrictions, military aircraft may operate autonomously or in be receipt of an air traffic service (when not occupied by Unmanned Air Vehicles (UAV)). MOD and United States Air Force (USAF) aircraft are the predominant users but use of the TRA is not restricted to military users. Above the TRA is the East Anglia Military Training Area (EAMTA), FL 245 to FL 660. A cross-section diagram of the local airspace is at Figure 2.

2.1.2. RAF Lakenheath and RAF Mildenhall are situated adjacent to one another approximately 15NM to the South of RAF Marham. The airfields each have an ATZ (2.5 NM radius, up to 2000ft) and have a Combined MATZ (CMATZ) with a 5NM radius centred on each RP with a vertical limit of 3000ft. RAF Lakenheath provides the radar ATC services for both airfields. A Letter of Agreement (LOA) is in force between RAF Lakenheath and RAF Marham to mitigate the risk of collision of departing and arriving Air

[1] CAP 722 - Unmanned Aircraft System Operations in UK Airspace - Guidance (caa.co.uk)

[2] RA 2320 – Flight Procedures: Role Specific S2 and Certified Remotely Piloted Air Systems (publishing.service.gov.uk)

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Systems (AS) at both airfields. RAF Lakenheath is home to the U.S. Air Forces in Europe (USAFE) Fighter Wing operating F-35 and F-15 aircraft. RAF Mildenhall serves heavy air transport aircraft including the KC-135 aerial refuelling capability, RC-135V/W Rivet Joint reconnaissance aircraft plus the MC-130J and CV-22 Osprey transport aircraft.

2.1.3. To the East of RAF Marham by approximately 20 NM is Norwich Airport (NAL), surrounded by a Control Zone (CTR) and a Control Area (CTA), both up to 4000ft. An LOA is in place to facilitate safe ATC service to traffic to and from NAL and aircraft operating under the control of RAF Marham.

2.1.4. EG D208 Stanta is a Danger Area located 10 NM South East of RAF Marham. Utilised for ordinance, para dropping and Unmanned Air Systems (UAS) it is active from surface to 2500ft ALT (Occasionally (OCNL) up to 7500ft by NOTAM) and controlled by Lakenheath zone on 128.900 MHz.

2.1.5. RAF Marham is 10NM to the South of Sandringham House, which is subject to Restricted Area (RA) EG R219, with 1.5M radius centred on 524948N 0003049E from surface up to altitude 2000ft.

2.1.6. Sculthorpe MOD Training Area is located around 15 NM North East of RAF Marham for Close Air Support (CAS), Joint Force Air Component (JFAC) or Para/Air-dropping activity. All UK Military AS's operating in the vicinity of Sculthorpe are to contact RAF Marham on VHF 124·150[3].

Figure 1: RAF Marham Local Area. Source data: CAA VFR Aeronautical Chart 1:500K

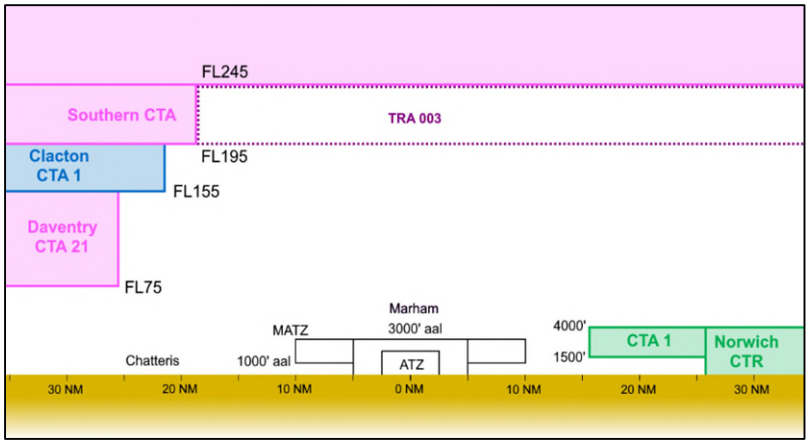

Figure 2: Cross-section Diagram of RAF Marham Local Airspace

2.2. Year 10

2.2.1. No anticipated changes.

Airspace usage.

2.3. Year of implementation

2.3.1. RAF Marham.

i. RAF Marham's assets are:

- The F-35 Lightning (617 & 207 Sqns), a 5th Generation, multi-role, stealth fighter.

[3] Source: UK MIL AIP AD 2 – EGYM

- Two Slingsby Aviation Firefly aircraft for the provision of flying training through the RAF Aero Club, which is active both during the week and at weekends in the local vicinity (up to 15NM away).

- A small Model Flying Club, active mainly during weekend hours or outside flying operations.

- Marham also has 809 Naval Air Squadron, with further force growth planned[4].

ii. The aerodrome operating hours are notified as follows, although it should be noted that RAF Marham currently operates a flexible flying window and times may differ from them at short notice:

- 0800 – 2359 Mon – Thu

- 0800 – 1800 Fri

iii. It is not possible to quantify routine aviation activity at RAF Marham[5] as there is no typical day. F-35s may operate as single AS or in formation, conducting anything from four to seven sorties in a 24-hour period. These may consist of; visual and instrument circuits at the aerodrome; departure to operate within 30NM for general handling; departure to operate in EG D323 over the North Sea.

iv. RAF Marham hosts numerous practice diversions (PD) throughout the day, mainly from RAF Lakenheath and RAF Cranwell, averaging 4 – 5 PDs per day.

2.3.2. Other military activity.

i. The airspace directly surrounding and overhead RAF Marham is used by fast jets for training up to FL245 by RAF Coningsby, RAF Lakenheath and RAF Marham airspace users, who conduct general-handling and air combat training, as well as simulated surface attack in vicinity of RAF Marham.

ii. The local Stanta range is also host to many close air support and forward air control exercises, supported by fast jets. The F-35B Practice Flame Out (PFO) approach demands surface--10,5000ft within 5nm of the airfield for overhead PFOs.

iii. On a daily basis Lakenheath departures and arrivals route through the Marham overhead to/from the D323 complex; departures from Lakenheath over fly the edge of the RAF Marham western MATZ stub and aircraft returning under VFR over fly the central MATZ. The vast majority of Mildenhall departures transit in the vicinity of Marham due to the TACAN provision.

iv. RAF Marham also accepts occasional Practice Diversions (PDs) from RAF Lakenheath; these are all co-ordinated through routine ATC means. RAF Cranwell and RAF Barkston Heath on occasion make use of Marham as their booked Diversion. Any such diversion commitment would be for up to 19 aircraft (Prefect) potentially plus four aircraft (Phenom).

2.4. Year 10

2.4.1. Forecasting out to 10 years is a challenging task from a MOD perspective. Over the past 4 years, RAF Marham's annual airfield movements have seen an increase from 5002 in 2020, to 8582 in 2023, shown at Table 1[6]; almost 60% in traffic growth. This is a result of the RAF receiving 37 F35s to date, less than half of the total expected number.

[4] Growth rate of 809 Naval Air Sn was not provided by the stakeholder

[5] Source for all RAF Marham activity data: RAF Marham ATC

[6] Source: RAF Marham ATC

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Year	Total No. of Airfield Movements
2020	5002
2021	5422
2022	7727
2023	8582

Table 1: RAF Marham Annual Airfield Movements

2.4.2. RAF Marham expects to host a total of 87 F35s, divided into 4 Sqns (three operational and 1 trg). This will represent a significant increase in sortie rate within the proposed airspace. Increased force growth at Lakenheath and cooperation with USAFE F35s means it is likely that RAF Marham air traffic levels will continue to grow the rate seen over the last 5 years for at least the next five.

3. Civilian Aviation Activity.

3.1. Year of implementation

3.1.1. NAL, serves circa 2700[7] aircraft movements annually, including scheduled and charter aircraft as well as offshore oil/gas/wind farm transportation. The CTA and CTR do not impact the RAF Marham MATZ.

3.1.2. The local area is populated by numerous civil airfields and airstrips supporting leisure flying (general aviation, gliding, paragliding and parachute activity). Of note are East Winch and Broughton (North and South) private landing strips, all of which are within the RAF Marham MATZ. LOAs have been implemented with these airfields, in addition to agreements with Rookery Farm, Great Massingham and Southery Airfields which are situated in the local vicinity.

3.1.3. The East Anglia Air Ambulance (EAAA) from both Cambridge and Norwich operate in the local area and require occasional access to cross the RAF Marham ATZ/MATZ at short notice in response to Helicopter Emergency Medical Service (HEMS) tasking.

3.1.4. RAF Marham is frequently used for both FW and RW VVIP movements, military and private. VVIP FW movements require the establishment of CAS-T.

3.1.5. Gliding activity generally takes place to the west and south of RAF Marham and is predominantly up to 4000ft. When the weather conditions are suitable, gliders also frequently cross to the north and east of Marham.

Whilst the MATZ is not a mandatory avoid for civil pilots, the majority of civil pilots call RAF Marham ATC when flying in proximity to the aerodrome and when requiring to transit within 5 nm of RAF Marham. A qualitative assessment was obtained from Marham ATC regarding the number of requests from civil airspace users to cross overhead RAF Marham (both inside and outside the MATZ). On an average day, RAF Marham ATC estimates that it will receive around 20 requests for MATZ and overhead crossings from general aviation (GA) aircraft (both leisure and sporting) passing within 5 nm overhead and operating below 7000 FT AAL. This may peak to the high 20s on the busiest flying days, but is estimated to be less than 30 on any given day. Supporting quantitative evidence has also been obtained from RAF Marham ATC in the form of a monthly breakdown of MATZ crossing requests for the 12 months Oct 2022 – Sep 2023 (inclusive). The figures are provided in Table 1[8] below. Since Marham ATC does not routinely operate at weekends the figures apply to requests for Monday to Friday only and no further granularity is available. Most requests for MATZ crossings are approved with minimum restrictions to the requested route and altitude. An occasional route alteration may be proposed by ATC to sequence crossers with RAF Marham

[7] Source: Table_03_Aircraft_Movements_PDF.rdl (caa.co.uk)

[8] Source: RAF Marham ATC

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traffic patterns either by lateral or vertical means. Outside the ATZ pilots are not duty-bound to accept the re-route and do not always do so, choosing to follow their stated route and keep a good lookout.

3.1.6. Approximately 10 civilian aircraft per day transit the RAF Marham overhead, above the MATZ. In addition, it is estimated that 50-60 military aircraft also pass overhead. Predominantly from RAF Lakenheath, the aircraft depart heading 240° for 3NM, then turn to the NE to pass over RAF Marham above FL 70.

3.1.7. The airspace surrounding Marham benefits from air traffic services provided by several military and civilian ATC units with good coverage under the Lower Airspace Radar Services (LARS) network. Aircraft operating in the vicinity RAF Marham who wish to obtain an air traffic service typically receive a LARS from either RAF Marham or NAL. The Change Sponsor is not aware of any particular issues regarding operational delays or choke points which should be considered.

Month	Number of MATZ Xers
October 22	48
November 22	41
December 22	14
January 23	32
February 23	33
March 23	71
April 23	73
May 23	36
June 23	83
July 23	46
August 23	57
September 23	54

Table 2: MATZ Crossers Oct 2022 to Sep 2023

3.2. Year 10

3.2.1. Estimated Class G airspace traffic growth in this area is likely to be generated by USAFE operations together with GA traffic and will be dependent on various economic and social factors that are impossible to predict (e.g. fuel costs, GDP etc.). Therefore, although the data provided below at Table 3[22] indicates an overall increase in both LARS traffic and MATZ crossers at RAF Marham, no further granularity is available on which to evaluate a reliable 10 year forecast.

3.2.2. The MOD is not aware of any significant forecast increase in civil traffic in the vicinity of RAF Marham, from both the commercial and GA perspective.

Year	LARS	MATZ Crossers
2020	4043	599
2021	4952	907
2022	5815	615
2023	5556	616

Table 3: RAF Marham Annual Statistics

4. Safety Risks.

4.1. Year of implementation

[22] Source: RAF Marham ATC

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4.1.1. There are no anticipated safety risks.

4.2. Year 10

4.2.1. There are no anticipated changes to safety risks.

5. Local features below 7,000ft.

5.1. Year of implementation

5.1.1. Within the RAF Marham MATZ there are no densely populated areas. Whilst there are no adjacent National Parks[23] or Areas of Outstanding Natural Beauty (AONB)[24], an Air Quality Management Area (AQMA)[25] has been located on the edge of the MATZ boundary at Swaffham.

5.2. Year 10

5.2.1. There are no anticipated changes to local features below 7,000ft.

European sites overflown below 3000ft.

5.3. Year of implementation

5.3.1. The Change Sponsor is aware of one current Special Area of Conservation (SAC) pertaining to the Norfolk Valley Fens[26]. There are no Special Protection Areas (SPA)[27]; Ramsar sites[28] (wetlands of international importance) or Compensatory habitat (areas secured to compensate for damage to SACs, SPAs and Ramsar sites).

5.4. Year 10

5.4.1. There are no anticipated changes to European sites overflown below 3000ft.

6. Environmental impacts.

6.1. Year of implementation

6.1.1. There are no anticipated environmental issues (including tranquillity, biodiversity or air quality) within the structure.

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[23] Source: https://www.nationalparks.uk/

[24] Source: Areas of outstanding natural beauty (AONBs): designation and management - GOV.UK (www.gov.uk) and Magic Map Application (defra.gov.uk)

[25] Source: Defra, Air Information Resource Air Quality Management Areas (AQMAs) - Defra, UK. Breckland District Council Air Quality Management Area Number 2 Order 2017 is an area to the north and south of Swaffham town centre with declared Nitrogen dioxide NO2 pollutant (https://uk-air.defra.gov.uk/aqma/details?aqma_ref=1654#1259)

[26] Source: Norfolk Valley Fens - Special Areas of Conservation (jncc.gov.uk). The Norfolk Valley Fens is where main concentration of lowland Alkaline fens occurs, plus species of Narrow-mouthed whorl snail and Desmoulin's whorl snail.

[27] Source: Natural England Access to Evidence - Special Protection Areas Map

[28] Source: Ramsar (England) | Ramsar (England) | Natural England Open Data Geoportal (arcgis.com)

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6.2. Year 10

6.2.1. There are no anticipated changes to environmental issues (including tranquillity, biodiversity or air quality) within the structure.

7. Local Context.

7.1. Year of implementation

7.1.1. There are currently nine planning applications in place within the Marham MATZ (7 minor, two major), none of which impact the airspace; there are no planning agreements[29][30].

7.1.2. RAF Marham has existing noise abatement procedures[31] to avoid Fincham and Castle Acre. There are no noise action plans[32] within the RAF Marham MATZ that the Change Sponsor is currently aware of.

7.2. Year 10

7.2.1. There are no anticipated changes to the local context.

Local Trade-offs and Priorities

7.3. Year of implementation

7.3.1. There are no anticipated local trade-offs of priorities.

7.4. Year 10

7.4.1. There are no anticipated local trade-offs of priorities.

[29] Source: View and track planning applications | View and track planning applications | Borough Council of King's Lynn & West Norfolk (west-norfolk.gov.uk)

[30] Source: MyNearest | Borough Council of King's Lynn & West Norfolk (west-norfolk.gov.uk)

[31] Source: UK MIL AIP AD 2 – EGYM

[32] Source: Noise Action Plan (2019): Agglomerations (Urban Areas) (publishing.service.gov.uk)

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Appendix C - ACP-2023-022 - Raw Engagement Records

Included by separate PDF due to size

Archived: 09 April 2024 16:40:49
From: [redacted]
Sent: 04 March 2024 21:17:00
Bcc: [redacted]
Subject: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material
Sensitivity: Normal
Attachments:
Enclosure 1 - ACP-2023-022 Stage 2 Engagement Feedback Response Form.docx ;

Dear Stakeholder,

You have been previously contacted as a key stakeholder in the Civil Airspace Publication (CAP) 1616 process for a permanent airspace change which is being sponsored by the Ministry of Defence in the vicinity of RAF Marham. This change under the identification number ACP-2023-022 proposes to establish a volume of airspace centred on RAF Marham which will enable a large Remotely Piloted Air System (RPAS), Protector RG Mk1, to access RAF Marham as a diversion airfield.

The ACP has progressed to Stage 2 as defined in CAP 1616. Stage 2 engagement material is now available on the CAA ACP Portal at this link:

ACP-2023-022 Stage 2 Engagement Material-1.0

The MOD is seeking your feedback on the information presented in the engagement letter to assist in development of the baseline scenarios and design options.

A Response Form is attached to the engagement material in Word format (and also to this email) which you might find useful for your feedback. Comments are welcome in any written form, directly in an email if you prefer. The postal address at the top of the engagement letter will periodically be monitored for hard copy responses. Please advise if you have any issues in accessing the engagement material via the CAA ACP Portal.

Email responses should be sent to:
The Airspace Change Manager at UASCDC-ACP@qinetiq.com

Stakeholders are requested to return any feedback by **Friday 5 April 2024**.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Archived: 09 April 2024 16:40:52
From: [redacted]
Sent: 04 March 2024 21:17:00
Bcc: [redacted]
Subject: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material
Sensitivity: Normal
Attachments:
Enclosure 1 - ACP-2023-022 Stage 2 Engagement Feedback Response Form.docx ;

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ACP-2023-022 Stage 2 Engagement Material-1.0

The MOD is seeking your feedback on the information presented in the engagement letter to assist in development of the baseline scenarios and design options. NATMAC representatives are politely requested to ensure the information is disseminated to their members.

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The Airspace Change Manager at UASCDC-ACP@qinetiq.com

Stakeholders are requested to return any feedback by **Friday 5 April 2024**.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Please consider the environment before printing this email.

Archived: 09 April 2024 16:40:46
From: [redacted]
Sent: 04 March 2024 21:17:00
Bcc: [redacted]
Subject: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material
Sensitivity: Normal
Attachments:
Enclosure 1 - ACP-2023-022 Stage 2 Engagement Feedback Response Form.docx ;

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The ACP has progressed to Stage 2 as defined in CAP 1616. Stage 2 engagement material is now available on the CAA ACP Portal at this link:

ACP-2023-022 Stage 2 Engagement Material-1.0

The MOD is seeking your feedback on the information presented in the engagement letter to assist in development of

the baseline scenarios and design options.

A Response Form is attached to the engagement material in Word format (and also to this email) which you might find useful for your feedback. Comments are welcome in any written form, directly in an email if you prefer. The postal address at the top of the engagement letter will periodically be monitored for hard copy responses. Please advise if you have any issues in accessing the engagement material via the CAA ACP Portal.

Email responses should be sent to:
The Airspace Change Manager at UASCDC-ACP@qinetiq.com

Stakeholders are requested to return any feedback by **Friday 5 April 2024**.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Archived: 09 April 2024 16:41:36
From: UASCDC-ACP
Sent: 21 March 2024 13:07:00
Bcc: [redacted]
Subject: UC FW: Reminder - UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material
Response requested: No
Sensitivity: Normal
Attachments:
Enclosure 1 - ACP-2023-022 Stage 2 Engagement Feedback Response Form.docx ;

Dear Stakeholder,

This is a gentle reminder that feedback is encouraged regarding the suggested Design Options for the airspace proposed at ACP-2023-022. If you do have any comments, and have not already done so, please send them by return of email by Friday 5 April 2024.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@ginetiq.com

UAS CDC

Please consider the environment before printing this email.

From: [redacted]

Sent: 04 March 2024 21:17
Subject: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

Dear Stakeholder,

You have been previously contacted as a key stakeholder in the Civil Airspace Publication (CAP) 1616 process for a permanent airspace change which is being sponsored by the Ministry of Defence in the vicinity of RAF Marham. This change under the identification number ACP-2023-022 proposes to establish a volume of airspace centred on RAF Marham which will enable a large Remotely Piloted Air System (RPAS), Protector RG Mk1, to access RAF Marham as a diversion airfield.

The ACP has progressed to Stage 2 as defined in CAP 1616. Stage 2 engagement material is now available on the CAA ACP Portal at this link:

ACP-2023-022 Stage 2 Engagement Material-1.0

The MOD is seeking your feedback on the information presented in the engagement letter to assist in development of the baseline scenarios and design options.

A Response Form is attached to the engagement material in Word format (and also to this email) which you might find useful for your feedback. Comments are welcome in any written form, directly in an email if you prefer. The postal address at the top of the engagement letter will periodically be monitored for hard copy responses. Please advise if you have any issues in accessing the engagement material via the CAA ACP Portal.

Email responses should be sent to:
The Airspace Change Manager at UASCDC-ACP@qinetiq.com

Stakeholders are requested to return any feedback by **Friday 5 April 2024**.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Archived: 09 April 2024 16:41:31
From: UASCDC-ACP
Sent: 21 March 2024 13:11:00
Bcc: [redacted]
Subject: UC FW: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material
Response requested: No
Sensitivity: Normal
Attachments:
Enclosure 1 - ACP-2023-022 Stage 2 Engagement Feedback Response Form.docx ;

Dear NATMAC member,

This is a gentle reminder that feedback is encouraged regarding the suggested Design Options for the airspace proposed at ACP-2023-022. If you do have any comments, and have not already done so, please send them by return of email by Friday 5 April 2024.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Please consider the environment before printing this email.

From: /O=DERA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=TSBRADLEY0D2
Sent: 04 March 2024 21:18
Subject: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

Dear NATMAC member,

You have been previously contacted as a key stakeholder in the Civil Airspace Publication (CAP) 1616 process for a permanent airspace change which is being sponsored by the Ministry of Defence in the vicinity of RAF Marham. This change under the identification number ACP-2023-022 proposes to establish a volume of airspace centred on RAF Marham which will enable a large Remotely Piloted Air System (RPAS), Protector RG Mk1, to access RAF Marham as a diversion airfield.

The ACP has progressed to Stage 2 as defined in CAP 1616. Stage 2 engagement material is now available on the CAA ACP Portal at this link:

ACP-2023-022 Stage 2 Engagement Material-1.0

The MOD is seeking your feedback on the information presented in the engagement letter to assist in development of the baseline scenarios and design options. NATMAC representatives are politely requested to ensure the information is disseminated to their members.

A Response Form is attached to the engagement material in Word format (and also to this email) which you might find useful for your feedback. Comments are welcome in any written form, directly in an email if you prefer. The postal address at the top of the engagement letter will periodically be monitored for hard copy responses. Please advise if you have any issues in accessing the engagement material via the CAA ACP Portal.

Email responses should be sent to:
The Airspace Change Manager at UASCDC-ACP@qinetiq.com

Stakeholders are requested to return any feedback by **Friday 5 April 2024**.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

Archived: 09 April 2024 16:41:33
From: UASCDC-ACP
Sent: 21 March 2024 13:09:00
Bcc: [redacted]
Subject: UC FW: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material
Response requested: No
Sensitivity: Normal
Attachments:
Enclosure 1 - ACP-2023-022 Stage 2 Engagement Feedback Response Form.docx ;

Dear Stakeholder,

This is a gentle reminder that feedback is encouraged regarding the suggested Design Options for the airspace proposed at ACP-2023-022. If you do have any comments, and have not already done so, please send them by return of email by Friday 5 April 2024.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Please consider the environment before printing this email.

From: /O=DERA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=TSBRADLEY0D2
Sent: 04 March 2024 21:17
Subject: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

Dear Stakeholder,

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The ACP has progressed to Stage 2 as defined in CAP 1616. Stage 2 engagement material is now available on the CAA ACP Portal at this link:

ACP-2023-022 Stage 2 Engagement Material-1.0

The MOD is seeking your feedback on the information presented in the engagement letter to assist in development of the baseline scenarios and design options.

A Response Form is attached to the engagement material in Word format (and also to this email) which you might find

useful for your feedback. Comments are welcome in any written form, directly in an email if you prefer. The postal address at the top of the engagement letter will periodically be monitored for hard copy responses. Please advise if you have any issues in accessing the engagement material via the CAA ACP Portal.

Email responses should be sent to:
The Airspace Change Manager at UASCDC-ACP@qinetiq.com

Stakeholders are requested to return any feedback by **Friday 5 April 2024**.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Please consider the environment before printing this email.

Ministry of Defence

Headquarters Air Command

Room 1W27, Spitfire Block
Royal Air Force
High Wycombe
Buckinghamshire
HP14 4UE

4 March 2024

ACP-2023-022 AIRSPACE DESIGN OPTIONS – STAKEHOLDER ENGAGEMENT v1.0

1. Introduction

1.1. This document forms part of the airspace change process as defined in Civil Airspace Publication (CAP)1616. ACP-2023-022[1] was commenced to enable the operation of a large Remotely Piloted Air System (RPAS), Protector RG Mk1, to and from a nominated diversion airfield at Royal Air Force (RAF) Marham. The Change Sponsor for this Airspace Change Proposal (ACP) is the Ministry of Defence (MOD).

1.2. The main operating base (MOB) for Protector is RAF Waddington, where permanent segregated airspace in the form of a danger area has been established to support Protector's operation. The danger area is EG D324A/B which was implemented at the end of November 2023. The current timescale is for routine Protector operations to commence from RAF Waddinton in early June 2024 when the MOD will conduct test and evaluation activities prior to Protector formally entering into service. During this, and for future activity in the UK, Protector will require a nominated permanent diversion airfield to be made available in the event that, for any unforeseen reason, RAF Waddington becomes unavailable. Following investigation into several military airfields, RAF Marham has been identified as the most suitable and preferred diversion airfield. Whilst Protector's MOB remains RAF Waddington there may be occasions when access to RAF Marham is required for operational reasons.

1.3. Access to RAF Marham as early as June 2024 is being managed under a separate MOD ACP (identification number ACP-2023-047[2]) and all key aviation stakeholders were approached late last year to provide feedback. The ACP has been recently approved by the CAA and will enable an airspace trial to take place to test the procedures at RAF Marham as the diversion airfield. The airspace trial will be conducted in accordance with a trial / test plan with specified and measurable objectives.

1.4. In terms of airspace construct, there is no expectation for the outer limits of the airspace design for this permanent ACP to differ from that of the trial, as they have already been demonstrated at RAF Waddington as sufficient to meet training and operational objectives.

1.5. This letter is part of the second stage of ACP-2023-022 to provide the permanent solution at RAF Marham.

1.6. Due to the position, construct and frequency of use of the proposed airspace, it is anticipated there will be no impact on non-aviation stakeholders.

[1] Each airspace change proposal (ACP) has a unique identifier allocated by the CAA. ACP-2023-022 is the airspace change identification of the ACP which is entitled "RPAS operations to/from a nominated diversion airfield".

[2] Details of the temporary change can be found on the CAA ACP Portal here.

2. Layout of this Letter

The regulatory requirement is explained before the extant Design Principles (DPs) selected at Stage 1 of this ACP are re-iterated. The document then outlines the various airspace design options considered to meet the Statement of Need.

3. Regulatory Requirement

Protector has a 79ft wingspan and is 38ft long. It is powered by a single TPE 331-10 turbo-prop engine and will be operated by fully qualified RAF pilots.

3.1. UK military aviation is regulated by the Military Aviation Authority (MAA). Accordingly, the Protector programme is subject to the MAA Regulatory Publications (MRP). Of particular relevance to the operation of Protector in UK airspace is MAA Regulatory Article (RA) 2320 – MAA regulation for operation of military RPAS. The RA states the criteria for beyond visual line of sight (BVLOS[3]) RPAS operation such that within UK airspace, BVLOS operations should only be conducted if:

- An appropriately approved Detect and Avoid (DAA) capability enables compliance with Rules of the Air appropriate to the class of airspace, or;

- They are flown using a Layered Safety Approach that specifically requires flight in Segregated Airspace, or in Controlled Airspace (Classes A-D) with the informed consent of the Air Navigation Services Provider (ANSP).

3.2. When Protector initially comes into service it will be fitted with a limited DAA capability only and, since RAF Marham is located entirely within Class G airspace, flight in segregated or controlled airspace is required. This will permit Protector to access RAF Marham in a safe environment, maintain regulatory compliance, and provide protection of other airspace users of any associated and identified hazardous activities.

4. Design Principles (DPs)

4.1. In January this year the MOD undertook engagement activity with a comprehensive list of aviation and non-aviation stakeholders to develop a set of Design Principles (DPs) for this ACP. This engagement and the rationale for the final selection of DPs can be found on the CAA ACP Portal[4]

[3] The MAA Master Glossary defines BVLOS as the operation of a Remotely Piloted Aircraft beyond a distance where the Remote Pilot is able to respond to or avoid other airspace users by visual means.

[4] See document entitled ACP-2023-022 Stage 1 DEFINE – Design Principles V1.0 at Airspace change proposal public view (caa.co.uk)

4.2. Table 1 shows the final set of DPs for ACP-2023-022. The DPs will be used during Stage 2 of this ACP to inform the development of the design options and against which the options can be qualitatively evaluated.

Priority	Ref	Design Principle
1	DP1	The airspace change proposal must maintain a high standard of safety and should seek to enhance levels of safety, wherever possible.
2	DP2	The airspace provides access to a sufficient area to meet operational and training objectives.
3	DP5	The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.
4	DP3	The airspace design should endeavour to maximise accessibility for other airspace users.
	DP4	The airspace change proposal should consider the impacts on all airspace users.

Table 1 - ACP-2023-022 DPs following stakeholder engagement

5. Baseline Scenarios

5.1. The Change Sponsor must undertake an assessment of the impacts of the future scenario without any airspace change[5], by comparison against the impacts of any proposed design options. To achieve this the MOD has prepared two baseline scenarios[6] in accordance with CAP1616 as follows:

- A scenario based on the year of implementation without the airspace change proposed (year 1)

- A scenario based on 10 years after implementation without the airspace change proposed (year 10)

5.2. Both scenarios are provided at Annex A and the Change Sponsor is interested in your feedback as to their suitability. Changes to the use of the airspace, independent of the proposed airspace change (such as traffic growth and fleet changes) will be evaluated along with the design options and then measured against each of the design principles. An initial options appraisal on the impacts of each design option (including the baseline) will be conducted.

6. Design Options

6.1. Through continued collaboration with the air vehicle manufacturer, General Atomics – Aeronautical Systems Incorporated (GA-ASI) and RAF subject matter experts the MOD has

[5] CAP 1616f – Stage 2 - Develop and Assess

[6] In accordance with CAP 1616 v4.0, it was not a requirement to present the current day scenario (baseline) to stakeholders until Stage 2 of the ACP; however, CAP 1616 v5.0 (effective January 2024) mandates this is a requirement at Stage 1, with additional Year 1 'no change' and Year 10 'no change' baseline scenarios at Stage 2. The current day scenario was provided for the trial airspace (ACP-2023-047) and does not differ from the year 1 scenario for this ACP, which is provided at Annex A.

focussed on minimising the impact of EG D324 at RAF Waddington on other airspace users, whilst maintaining military operational objectives and operating in accordance with current regulation. Similar considerations have been employed in developing the airspace design for the airspace trial at RAF Marham. The Change Sponsor sees no merit in revisiting design options that were rejected during the original ACP for RAF Waddington[7] and is proposing the same airspace design(s) for the permanent airspace change as the design that will be trialled this summer.

6.2. In accordance with the CAP1616 process, the MOD engaged with aviation stakeholders last year in the run up to the establishment of a Temporary Danger Area (TDA) at RAF Marham (ACP-2023-047). The TDA will support a trial of RAF Marham as the diversion airfield and as stated in para 1.3 is expected to commence in the summer of 2024 with a duration of up to 6 months. Feedback on the option of an internal division within the trial airspace construct, together with any assessment of test plan objectives obtained during the early phase of the trial, will be key in the finalisation of the airspace design for ACP-2023-022.

6.3. The MOD is presenting 2 airspace design options both in the form of a cylinder of 5 nm radius centred on RAF Marham's Aerodrome Reference Point[8] (ARP). Both options are located directly beneath Class C airspace, which during notified hours[9] is activated as a Temporary Reserved Area (TRA). The overall vertical dimensions of both airspace design options are from surface to Flight Level (FL)195[10]

6.4. Responses from stakeholders on how they perceive the suitability of these options and their preferences are invited, as this will help determine the airspace design option(s) to take through to Stage 3.

6.5. Both airspace design options are intended for use by Protector as follows:

- Planned use of RAF Marham for anything other than operational necessity is not envisaged.
- When required to access RAF Marham. Protector will enter the cylinder at FL195 from the adjoining Class C airspace above. It will then perform a spiral descent and execute its automatic landing profile to the main runway[11];
- On departure from RAF Marham. Protector will execute its automatic take-off profile and perform a spiral climb to FL195 when it will enter Class C airspace;
- On occasion crews may be required to conduct practise diversions into RAF Marham for currency reasons.

6.6. Note that operations in both runway directions are being supported in each airspace design. Protector has a long endurance (20 hrs+) and the designs need to cater for the event of a runway change.

6.7. As discussed at para 3.1, Protector is subject to the MAA RA 2320: Protector will initially come into service with a limited DAA capability, and as RAF Marham is located entirely within Class G airspace, flight in segregated or controlled airspace is required. Thus, the 'do nothing' scenario would mean that Protector operations cannot take place at RAF Marham (or outside of

[7] ACP-2019-18 can be found on the CAA ACP Portal here

[8] RAF Marham airfield reference point is the midpoint of RW05/23 (52 38 54.26N 000 33 02.42E)

[9] Mon-Fri 0830 to 1700 UTC Winter; Mon-Fri 0730 to 1700 UTC Summer; Excluding English Public Holidays. TRA may be activated at other times by NOTAM.

[10] A Flight Level (FL) is used to ensure that all aircraft are flying to a common datum to ensure height separation is maintained (1 Flight Level = approximately 100 ft, eg FL 195 = approximately 19,500 ft).

[11] The Protector air system is equipped with an Automatic Take-Off and Landing Capability (ATLC) which means that Protector will follow pre-determined flight profiles for the initial departure and final approach phases of flight.

EG D324 at RAF Waddington). The aspiration remains that, with developments in technology and a better understanding of RPAS operations within the UK, BVLOS activity can eventually be integrated into all classes of airspace.

Option 1

Source data: CAA VFR Aeronautical Chart 1:500K

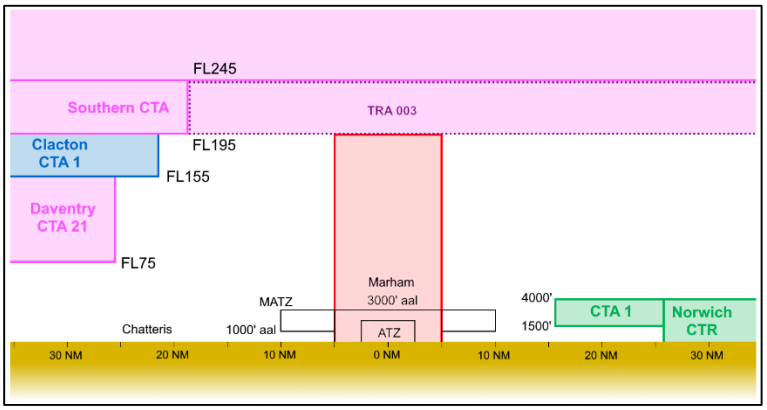

Figure 1- RAF Marham TDA SW/NE Cross-section

Lateral Dimension: 5 nm radius circle centred on RAF Marham's aerodrome reference point (ARP)

Vertical Dimension: Surface to FL195.

Option 2

Source data: CAA VFR Aeronautical Chart 1:500K

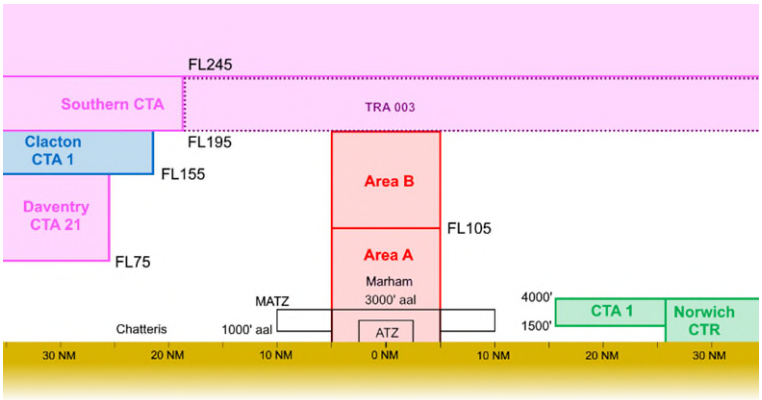

Figure 2- RAF Marham TDA SW/NE Cross-section with internal vertical division

Lateral Dimension: 5 nm radius circle centred on RAF Marham's aerodrome reference point (ARP)

Vertical Dimension:
Area A Surface to FL105
Area B FL105 - FL195.

6.8. An internal division is incorporated within the cylinder (thereby splitting the airspace into 2 vertical sections) to facilitate a more expeditious air traffic management. When Protector is not within a section, it would be considered inactive and aircraft may be permitted to enter the airspace. Aircraft would only be prevented from accessing either section of airspace when Protector is in (or about to enter) either section. It is thought that this will reduce holding times and thereby promote Flexible Use of Airspace (FUA) for all local airspace users (civil and military). The level of the division has been selected as FL105[12] for Option 2 and will be gauged for suitability by feedback from stakeholders and during the early stages of the airspace trial, which has been approved under ACP-2023-047.

7. Type of Airspace to Accommodate Protector Activities

7.1. RAF Marham sits entirely within Class G airspace, which does not provide adequate segregation for Protector without a full DAA capability. Consideration has been given to the most appropriate type of airspace to accommodate Protector activities; a precis follows and is then further summarised in Table 2 below.

7.2. In broad terms civil and military regulations specify that without an appropriately approved DAA capability, Protector must be flown using a Layered Safety Approach that specifically requires flight in segregated airspace. Protector is fitted with TCAS II, which may be approved to provide a DAA capability in airspace where all traffic can be expected to be operating a transponder (i.e. transponder-mandatory airspace). The MOD is producing an Airspace Integration Safety Argument (AISA) for the introduction of Protector into UK airspace. This work aims to develop an evidenced argument for the safe operation of Protector under Instrument Flight Rules (IFR) and under an air traffic service within transponder-mandatory airspace, as well as in suitable segregated airspace.

Type of segregated airspace	Suitability for Protector	MOD Comment
Classes A & C Class D above FL100 or if below FL100 is also a TMZ[13]	Yes	These classes of airspace are not justifiable by the Change Sponsor in terms of: o Restrictions placed on other airspace users; o Air traffic management resourcing; o Flexible use of airspace (notified hours of activation in UK AIP).
Class E	Unknown	Pending AISA for Protector, but thought unlikely to be suitable.
Class G Danger Area	Yes	Less impact on other airspace users since it can be tactically managed (does not have notified hours of activation in UK AIP)
TMZ/RMZ	Possibly	Not being considered for same reasons as noted above for Classes A, C and D,

Table 2- Proposed Airspace Types for Consideration with MOD Comment

[12] FL105 was selected as the same level at which division is made in EGD 324 at RAF Waddington.

[13] TMZ = Transponder Mandatory Zone.

7.3. It is envisaged, therefore, that the most economical type of airspace to be implemented (in terms of hours of activation, access to airspace and manpower resource) would be segregated airspace in the form of a Danger area. However, the MOD is keen to understand other airspace users' views on the type of airspace to be implemented.

8. Measures to Minimise the Impact on other Airspace Users

8.1. The type of airspace implemented will drive the overall hours of airspace activation. As suggested above, the implementation of segregated airspace in the form of a danger area will provide the most efficient and tactical use of airspace, since the MOD will be able to activate the airspace structures only as and when necessary.

8.2. The proposed airspace will not be permanently active; it will only be activated when Protector flying is due to take place (either from RAF Waddington or on departure from RAF Marham). Procedures will be adopted to ensure that the airspace is activated and notified only as and when required. This will involve appropriate Notice To Aviation (NOTAM) action being taken at D-1[14]. To ensure minimum disruption to other airspace users a Special Use Airspace Crossing Service (SUACS) will be offered within all implemented airspace. This means that, even if the airspace has been notified as being active, it may be possible for both civil and military aircraft to transit through it under a clearance from either RAF Marham or Swanwick Military ATC.

8.3. Information on the current status of the airspace will be available, including a Special Use Airspace Activity Information Service (SUAAIS) via RAF Marham or other appropriate military ATC units.

9. Utilisation of Airspace

9.1. The Change Sponsor anticipates that during the first 6 months of Protector's service in the RAF, the flying tempo will be restricted to one air vehicle at a time during core flying hours Monday – Friday. This is likely to occur up to 3 times per week. It is difficult to predict when the flying tempo will significantly increase, but potentially within the first 24 months of service, there may be up to 2 air vehicles in the air simultaneously. Some night-flying is expected.

[14] D-1 means that the NOTAM must be requested the day before the airspace is to be activated.

10. How to Provide Feedback

10.1. The MOD welcomes comments and feedback from all interested parties. All comments received regarding this proposal will be taken into consideration before taking the design(s) through to CAP1616 Stage 3. All the details of this airspace change proposal are available on the CAA ACP Portal. The ACP identification number is ACP-2023-022. Feedback on the proposed change and what is important to you should be sent to:

The Airspace Change Manager at UASCDC-ACP@qinetiq.com

10.2. A feedback form is provided at Enclosure 1 and a Word document is attached to the email containing this material for your use if you wish.

Responses must be received by 5 April 2024.

[redacted]

[redacted]
Change Sponsor

Annexes:

A. ACP-2023-022 Baseline Scenario

Enclosure:

1. ACP-2023-022 – Stage 2 Engagement Feedback Response Form

ANNEX A: ACP-2023-022 - Baseline Scenarios

1. Context.

1.1. Year of implementation

1.1.1. RAF Marham sits within class G airspace, which does not provide adequate protection or segregation for the equipment configuration of Protector. Civil[1] and military[2] regulations specify that without an appropriately approved Detect And Avoid (DAA) capability to enable compliance with the Rules of the Air appropriate to the class of airspace, Protector must be flown using a Layered Safety Approach that specifically requires flight in segregated airspace. Protector does not currently have an appropriately approved DAA appropriate to Class G airspace and therefore, is unable to access the airspace above and around RAF Marham. A map of the local area is at Figure 1.

1.2. Year 10

1.2.1. As the Protector programme progresses, it is anticipated that there would be advances in technology permitting the development and instalment of an appropriate DAA system on the airframe within the next 10 years. Should this be the case, then the required airspace would either be significantly reduced or negated.

2. Structures routes, procedures and behaviours.

2.1. Year of implementation

2.1.1. RAF Marham Air Traffic Zone (ATZ) is a circle 2·5 nm radius centred on Marham's aerodrome reference point (ARP), notified from surface to 2000ft Above Aerodrome Level (AAL). The Military Air Traffic Zone (MATZ) is a circle 5 nm radius centred on Marham's ARP and is notified from surface to 3000ft AAL. Pilots must call Marham Zone on frequency to obtain permission to enter the ATZ. No reply on the Zone frequency will indicate that Marham MATZ can be crossed but pilots must continue to avoid the ATZ unless operating in accordance with previously agreed procedures. The Zone frequency is normally available 0800-2359 (local) Mon-Thu, Fri 0800-1800 (local) subject to station-based operational requirements; all opening hours are routinely promulgated via a Notice To Aviation (NOTAM).

2.1.2. Directly above and surrounding RAF Marham the airspace is Class G up to Flight Level FL195; Class C extends from FL195 upwards. During specified hours the airspace is activated as a Temporary Reserved Area (TRA 003). Although the background classification between FL195 and FL245 is Class C, to avoid operational restrictions, military aircraft may operate autonomously or in be receipt of an air traffic service (when not occupied by Unmanned Air Vehicles (UAV)). MOD and United States Air Force (USAF) aircraft are the predominant users but use of the TRA is not restricted to military users. Above the TRA is the East Anglia Military Training Area (EAMTA), FL 245 to FL 660. A cross-section diagram of the local airspace is at Figure 2.

2.1.3. RAF Lakenheath and RAF Mildenhall are situated adjacent to one another approximately 15NM to the South of RAF Marham. The airfields each have an ATZ (2.5 NM radius, up to 2000ft) and have a

[1] CAP 722 - Unmanned Aircraft System Operations in UK Airspace - Guidance (caa.co.uk)

[2] RA 2320 – Flight Procedures: Role Specific S2 and Certified Remotely Piloted Air Systems (publishing.service.gov.uk)

Combined MATZ (CMATZ) with a 5NM radius centred on each RP with a vertical limit of 3000ft. RAF Lakenheath provides the radar ATC services for both airfields. A Letter of Agreement (LOA) is in force between RAF Lakenheath and RAF Marham to mitigate the risk of collision of departing and arriving Air Systems (AS) at both airfields. RAF Lakenheath is home to the U.S. Air Forces in Europe (USAFE) Fighter Wing operating F-35 and F-15 aircraft. RAF Mildenhall serves heavy air transport aircraft including the KC-135 aerial refuelling capability, RC-135V/W Rivet Joint reconnaissance aircraft plus the MC-130J and CV-22 Osprey transport aircraft.

2.1.4. To the East of RAF Marham by approximately 20 NM is Norwich Airport (NAL), surrounded by a Control Zone (CTR) and a Control Area (CTA), both up to 4000ft. An LOA is in place to facilitate safe ATC service to traffic to and from NAL and aircraft operating under the control of RAF Marham.

2.1.5. EG D208 Stanta is a Danger Area located 10 NM South East of RAF Marham. Utilised for ordinance, para dropping and Unmanned Air Systems (UAS) it is active from surface to 2500ft ALT (Occasionally (OCNL) up to 7500ft by NOTAM) and controlled by Lakenheath zone on 128.900 MHz.

2.1.6. RAF Marham is 10NM to the South of Sandringham House, which is subject to Restricted Area (RA) EG R219, with 1.5M radius centred on 524948N 0003049E from surface up to altitude 2000ft.

2.1.7. Sculthorpe MOD Training Area is located around 15 NM North East of RAF Marham for Close Air Support (CAS), Joint Force Air Component (JFAC) or Para/Air-dropping activity. All UK Military AS's operating in the vicinity of Sculthorpe are to contact RAF Marham on VHF 124·150[3].

Figure 1: RAF Marham Local Area.
Source data: CAA VFR Aeronautical Chart 1:500K

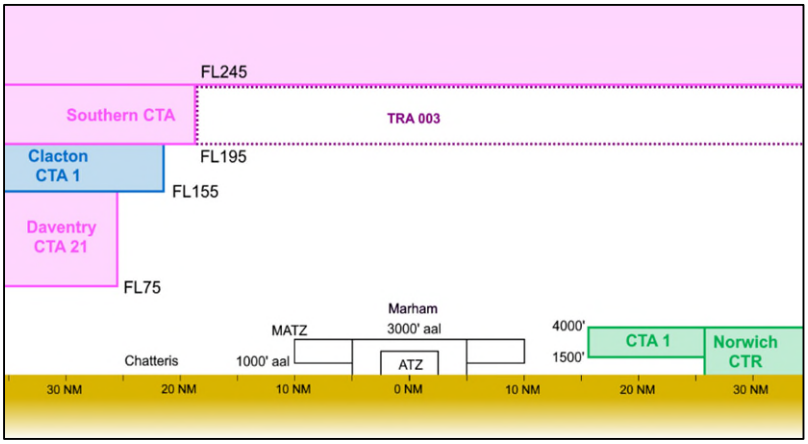

Figure 2: Cross-section Diagram of RAF Marham Local Airspace

2.2. Year 10

2.2.1. No anticipated changes.

[3] Source: UK MIL AIP AD 2 – EGYM

3. Airspace usage.

3.1. Year of implementation

3.1.1. RAF Marham.

i. RAF Marham's assets are:

- The F-35 Lightning (617 & 207 Sqns), a 5th Generation, multi-role, stealth fighter.

- Two Slingsby Aviation Firefly aircraft for the provision of flying training through the RAF Aero Club, which is active both during the week and at weekends in the local vicinity (up to 15NM away).

- A small Model Flying Club, active mainly during weekend hours or outside flying operations.

ii. The aerodrome operating hours are notified as follows, although it should be noted that RAF Marham currently operates a flexible flying window and times may differ from them at short notice:

- 0800 – 2359 Mon – Thu

- 0800 – 1800 Fri

iii. It is not possible to quantify routine aviation activity at RAF Marham[18] as there is no typical day. F-35s may operate as single AS or in formation, conducting anything from 4 to 7 sorties in a 24 hour period. These may consist of; visual and instrument circuits at the aerodrome; departure to operate within 30NM for general handling; departure to operate in EG D323 over the North Sea.

iv. RAF Marham hosts numerous practice diversions (PD) throughout the day, mainly from RAF Lakenheath and RAF Cranwell, averaging 4 – 5 PDs per day.

3.1.2. Other military activity.

i. The airspace directly surrounding and overhead RAF Marham is used by fast jets for training up to FL245 by RAF Coningsby, RAF Lakenheath and RAF Marham airspace users, who conduct general-handling and air combat training, as well as simulated surface attack in vicinity of RAF Marham.

ii. The local Stanta range is also host to many close air support and forward air control exercises, supported by fast jets. The F-35B Practice Flame Out (PFO) approach demands surface--7,5000ft within 5nm of the airfield for overhead PFOs.

iii. On a daily basis Lakenheath departures and arrivals route through the Marham overhead to/from the D323 complex, with the vast majority of Mildenhall departures routing in the vicinity of Marham due to the TACAN provision.

iv. RAF Marham also accepts occasional Practice Diversions (PDs) from RAF Lakenheath; these are all co-ordinated through routine ATC means.

[18] Source for all RAF Marham activity data: RAF Marham ATC

3.2. Year 10

3.2.1. Forecasting out to 10 years is a challenging task from a MOD perspective A third front-line F-35 squadron may be in situ at RAF Marham, generating a slight increase to potential traffic operating within the proposed airspace. Over the past 4 years, RAF Marham's annual airfield movements have seen an increase from 5002 in 2020, to 8582 in 2023, shown at Table 1[19]. Whist this is almost 60% in traffic growth, there is no reason to conclude that this rate will continue year on year as the figures are likely to have been impacted by the COVID pandemic and movements at the airfield may be subject to vast variations as a consequence of operational demands.

Year	Total No. of Airfield Movements
2020	5002
2021	5422
2022	7727
2023	8582

Table 1: RAF Marham Annual Airfield Movements

3.2.2. There are no other anticipated changes to military aircraft activity.

4. Civilian Aviation Activity.

4.1. Year of implementation

4.1.1. NAL, serves circa 2700[20] aircraft movements annually, including scheduled and charter aircraft as well as off-shore oil/gas/wind farm transportation. The CTA and CTR do not impact the RAF Marham MATZ.

4.1.2. The local area is populated by numerous civil airfields and airstrips supporting leisure flying (general aviation, gliding, paragliding and parachute activity). Of note are East Winch and Broughton (North and South) private landing strips, all of which are within the RAF Marham MATZ. LOAs have been implemented with these airfields, in addition to agreements with Rookery Farm, Great Massingham and Southery Airfields which are situated in the local vicinity.

4.1.3. The East Anglia Air Ambulance (EAAA) from both Cambridge and Norwich operate in the local area and require occasional access to cross the RAF Marham ATZ/MATZ at short notice in response to Helicopter Emergency Medical Service (HEMS) tasking.

4.1.4. The King's Helicopter Flight (KHF) operating in and out of Sandringham House utilise RAF Marham for refuelling purposes.

4.1.5. Gliding activity generally takes place to the west and south of RAF Marham and is predominantly up to 4000ft.

Whilst the MATZ is not a mandatory avoid for civil pilots, the majority of civil pilots call RAF Marham ATC when flying in proximity to the aerodrome and when requiring to transit within 5 nm of RAF Marham. A qualitative assessment was obtained from Marham ATC regarding the number of requests from civil airspace users to cross overhead RAF Marham (both inside and outside the MATZ). On an average day, RAF Marham ATC estimates that it will receive around 20 requests for MATZ and overhead crossings from general aviation

[19] Source: RAF Marham ATC

[20] Source: Table_03_Aircraft_Movements_PDF.rdl (caa.co.uk)

(GA) aircraft (both leisure and sporting) passing within 5 nm overhead and operating below 7000 FT AAL. This may peak to the high 20s on the busiest flying days, but is estimated to be less than 30 on any given day. Supporting quantitative evidence has also been obtained from RAF Marham ATC in the form of a monthly breakdown of MATZ crossing requests for the 12 months Oct 2022 – Sep 2023 (inclusive). The figures are provided in Table 1[21] below. Since Marham ATC does not routinely operate at weekends the figures apply to requests for Monday to Friday only and no further granularity is available. Most requests for MATZ crossings are approved with minimum restrictions to the requested route and altitude. An occasional route alteration may be proposed by ATC to sequence crossers with RAF Marham traffic patterns either by lateral or vertical means. Outside the ATZ pilots are not duty-bound to accept the re-route and do not always do so, choosing to follow their stated route and keep a good lookout.

4.1.6. Approximately 10 civilian aircraft per day transit the RAF Marham overhead, above the MATZ. In addition, it is estimated that 50-60 military aircraft also pass overhead. Predominantly from RAF Lakenheath, the aircraft depart heading 240° for 3NM, then turn to the NE to pass over RAF Marham above FL 70.

4.1.7. The airspace surrounding Marham benefits from air traffic services provided by several military and civilian ATC units with good coverage under the Lower Airspace Radar Services (LARS) network. Aircraft operating in the vicinity RAF Marham who wish to obtain an air traffic service typically receive a LARS from either RAF Marham or NAL. The Change Sponsor is not aware of any particular issues regarding operational delays or choke points which should be considered.

Month	Number of MATZ Xers
October 22	48
November 22	41
December 22	14
January 23	32
February 23	33
March 23	71
April 23	73
May 23	36
June 23	83
July 23	46
August 23	57
September 23	54

Table 2: MATZ Crossers Oct 2022 to Sep 2023

4.2. Year 10

4.2.1. Estimated Class G airspace traffic growth in this area is likely to be generated primarily by GA traffic and will be dependent on various economic and social factors that are impossible to predict (e.g. fuel costs, GDP etc.). Therefore, although the data provided below at Table 3[22] indicates an overall increase in both LARS traffic and MATZ crossers at RAF Marham, no further granularity is available on which to evaluate a reliable 10 year forecast.

[21] Source: RAF Marham ATC

[22] Source: RAF Marham ATC

4.2.2. The MOD is not aware of any significant forecast increase in civil traffic in the vicinity of RAF Marham, from both the commercial and GA perspective.
4.2.3.

Year	LARS	MATZ Crossers
2020	4043	599
2021	4952	907
2022	5815	615
2023	5556	616

Table 3: RAF Marham Annual Statistics

5. Safety Risks.

5.1. Year of implementation

5.1.1. There are no anticipated safety risks.

5.2. Year 10

5.2.1. There are no anticipated changes to safety risks.

6. Local features below 7,000ft.

6.1. Year of implementation

6.1.1. Within the RAF Marham MATZ there are no densely populated areas. Whilst there are no adjacent National Parks[23] or Areas of Outstanding Natural Beauty (AONB)[24], an Air Quality Management Area (AQMA)[25] has been located on the edge of the MATZ boundary at Swaffham.

6.2. Year 10

6.2.1. There are no anticipated changes to local features below 7,000ft.

7. European sites overflown below 3000ft.

7.1. Year of implementation

7.1.1. The Change Sponsor is aware of one current Special Area of Conservation (SAC) pertaining to the Norfolk Valley Fens[26]. There are no Special Protection Areas (SPA)[27]; Ramsar sites[28] (wetlands of

[23] Source: https://www.nationalparks.uk/

[24] Source: Areas of outstanding natural beauty (AONBs): designation and management - GOV.UK (www.gov.uk) and Magic Map Application (defra.gov.uk)

[25] Source: Defra, Air Information Resource Air Quality Management Areas (AQMAs) - Defra, UK. Breckland District Council Air Quality Management Area Number 2 Order 2017 is an area to the north and south of Swaffham town centre with declared Nitrogen dioxide NO2 pollutant (https://uk-air.defra.gov.uk/aqma/details?aqma_ref=1654#1259)

[26] Source: Norfolk Valley Fens - Special Areas of Conservation (jncc.gov.uk). The Norfolk Valley Fens is where main concentration of lowland Alkaline fens occurs, plus species of Narrow-mouthed whorl snail and Desmoulin's whorl snail.

[27] Source: Natural England Access to Evidence - Special Protection Areas Map

[28] Source: Ramsar (England) | Ramsar (England) | Natural England Open Data Geoportal (arcgis.com)

international importance) or Compensatory habitat (areas secured to compensate for damage to SACs, SPAs and Ramsar sites).

7.2. Year 10

7.2.1. There are no anticipated changes to European sites overflown below 3000ft.

8. Environmental impacts.

8.1. Year of implementation

8.1.1. There are no anticipated environmental issues (including tranquillity, biodiversity or air quality) within the structure.

8.2. Year 10

8.2.1. There are no anticipated changes to environmental issues (including tranquillity, biodiversity or air quality) within the structure.

9. Local Context.

9.1. Year of implementation

9.1.1. There are currently 9 planning applications in place within the Marham MATZ (7 minor, two major), none of which impact the airspace; there are no planning agreements[29][30].

9.1.2. RAF Marham has existing noise abatement procedures[31] to avoid Fincham and Castle Acre. There are no noise action plans[32] within the RAF Marham MATZ that the Change Sponsor is currently aware of.

9.2. Year 10

9.2.1. There are no anticipated changes to the local context.

10. Local Trade-offs and Priorities

10.1. Year of implementation

10.1.1. There are no anticipated local trade-offs of priorities.

10.2. Year 10

10.2.1. There are no anticipated local trade-offs of priorities.

---

[29] Source: View and track planning applications | View and track planning applications | Borough Council of King's Lynn & West Norfolk (west-norfolk.gov.uk)

[30] Source: MyNearest | Borough Council of King's Lynn & West Norfolk (west-norfolk.gov.uk)

[31] Source: UK MIL AIP AD 2 – EGYM

[32] Source: Noise Action Plan (2019): Agglomerations (Urban Areas) (publishing.service.gov.uk)

Enclosure 1 - ACP-2023-022: Stage 2 Engagement Feedback Response Form

ACP-2023-022 - Stage 2 Engagement Feedback Response Form	
Name	
Representing	
Address	
Email Address	
Please refer to the design options indicated at Section 6. Which design option (1 or 2) is preferable to you? Please give your reasoning.	
Would you suggest any changes to either design option?	
What thoughts do you have regarding the type of airspace being considered (Class G Danger Area)?	
Please give your feedback on the suitability of the Baseline Assessment.	
Do you have any other suggestions, concerns or comments?	

Application for Dispensation from the CAA Safety Buffer Policy wrt ACP-2023-047 (Protect or diversion airfield at Marham)

References:

A. Policy Statement – Special Use Airspace – safety buffer policy for airspace design purposes dated 22 August 2014
B. DRAFT Policy Statement - Policy for the establishment and operation of Special Use Airspace (Annex I) dated 25 November 2023

1 ACP-2023-047 Requirement and Airspace Design

1.1 The proposed airspace associated with ACP-2023-047 comprises one single area of segregated airspace in the form of a temporary danger area (TDA). It is in the shape of a cylinder of 5 nm radius, centred on RAF Marham's Aerodrome Reference Point[1] (ARP) from surface to FL195. Figure 1 illustrates the lateral dimensions of the proposed TDA and Figure 2 illustrates a cross-section of the proposed TDA from a southwest/northeast perspective[2].

Figure 1 – RAF Marham TDA Lateral Dimensions

[1] RAF Marham airfield reference point is the midpoint of RW05/23 (52 38 54.26N 000 33 02.42E)
[2] Norwich International Airport is not directly aligned with RAF Marham's extended centreline, but it is shown here to provide an idea of the proximity of its controlled airspace in relation to RAF Marham's Military Aerodrome Traffic Zone (MATZ)

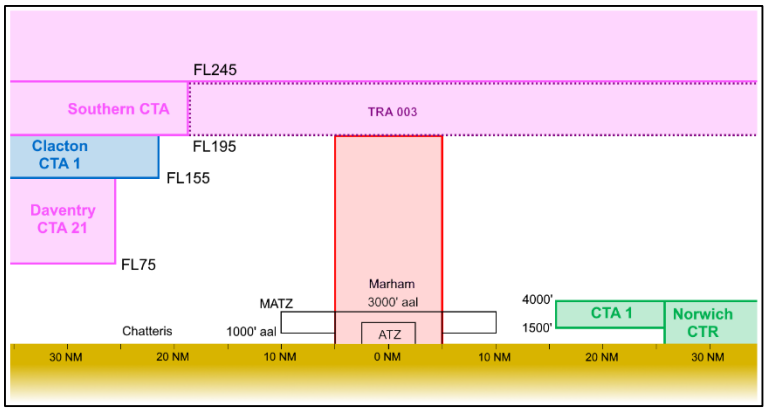

Figure 2 - RAF Marham TDA SW/NE Cross-section

2 Use of the Proposed TDA

2.1 In the event of an aircraft diversion, the design above provides Protector with a means to access RAF Marham from the Class C airspace directly above Marham and to do the reverse when repositioning post-diversion.

3 Safety Buffer Policy

3.1 Ref A is the current Safety Buffer Policy, but is likely to be superseded by Ref B; Ref B is out for comment at the moment, so it would be appropriate to consider the content of both documents.

3.2 Ref A: Para 2.5 of the current Safety Buffer Policy document lays out the types of activity which require a buffer to be applied. Of note for ACP-2023-047 it states:

> *2.5 The following descriptors as listed in the UK AIP ENR 5.1 will require the application of a lateral and/or vertical buffer:*
>
> - *Air Combat or High Energy Manoeuvres; Military Exercise; Supersonic Flight; Pilotless Target Aircraft; UAS (BVLOS)*
>
> *2.6 The following buffer criteria shall be applied to the activities described in paragraph 2.5:.*
>
> *a. Lateral Buffer Requirement - A lateral safety buffer will normally be established and promulgated in order that the minimum separation between structures will be:*
>
> *(1) 5nm from the edge of an airway, TMA, CTA or CTR.*
>
> *(2) 10nm from the centreline of Advisory or Upper ATS Routes.*
>
> *b. Vertical Buffer Requirement - SUA will normally be established and promulgated in order that a minimum separation of 2000ft above or below structures will be maintained.*
>
> *c. The above criteria may be achieved through airspace design or ATM procedures. Similarly, where a new controlled airspace structure or air traffic route is proposed, it may not be established where the above criteria would be infringed.*

3.2.1 Following assessment of the separation requirements iaw Ref A the Change Sponsor presents the following application with appropriate mitigations:

- Lateral dispensation is not required since there is no CAS within 5nm of the proposed TDA;

- Vertical dispensation is requested as the upper limit of the proposed TDA directly abuts the lower limit of Class C airspace. The MOD presents mitigations in the form of positive ATC management provision and the development of ATM procedures for consideration. Similar procedures have already been developed by the MOD in collaboration with NATS within work on ACP-2019-18 (see note below). Specifically, procedures to ensure that Protector remains at or below FL175 within the proposed TDA unless a clearance to climb above FL195 has been received from ATC. This will constitute approval to enter Class C airspace (regardless of whether TRA003 is active or not)

  Note: *Whilst the airspace proposed by ACP-2019-18 has recently been approved and implemented, NATS still has to complete some outstanding safety work before Protector test and evaluation flights will commence. However, it is anticipated that such work will be able to be transferred across to support this ACP and subsequently to ACP-2023-022, which will propose a permanent structure around RAF Marham for in-service diversion purposes.*

3.3 **Ref B**: The draft policy states that the purpose of a safety buffer is to ensure that SUA structures are adequately separated from flight planned aircraft operating in adjacent CAS. The stipulation for a 5nm lateral or 2000ft vertical buffer for RPAS BVLOS activity is not presented. After a request for clarification from the CAA, it is understood that the proposed draft policy signals Change Sponsors to engage with other ATC units / ANSPs to agree an appropriate buffer against flight planned aircraft (pre-tactical phase); such agreement must be submitted to the CAA a an appropriate stage of the ACP process. .

4 Loss of link procedures within proposed TDA

4.1 In the event of a loss of link (to be confirmed with 56 Sqn):

- ~~Protector will remain within the segregated airspace at all times;~~ for discussion during meeting

- On descending into the proposed TDA from Class C airspace, Protector will continue descent to FL175 or below and then onwards with an appropriately programmed profile;

- Whilst climbing within the proposed TDA, Protector will be programmed to remain below FL175.

Archived: 28 March 2024 12:51:13
From: UASCDC-ACP UASCDC-ACP
Sent: 26 March 2024 11:20:49
To: UASCDC-ACP UASCDC-ACP
Subject: RE: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material
Sensitivity: Normal
Attachments:
Enclosure 1 - ACP-2023-022 Stage 2 Engagement Feedback Response Form - Boughton Parish Council.pdf ;

From: UASCDC-ACP
Sent: 21 March 2024 12:48
To: [redacted]
Cc: UASCDC-ACP <UASCDC-ACP@qinetiq.com>
Subject: RE: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

[redacted]

Thank you for taking the time to respond to the Stage 2 engagement letter on behalf of Boughton PC. Your comments will be recorded; in particular, your suggestions of a 'layman's terms' summary has been noted and a document has been prepared for distribution to stakeholders at Stage 3, Consultation commencing June 2024.

We will keep you appraised on the progression of the ACP at each stage, unless you advise you no longer wish to be contacted.

All documents will be made available to view on the CAA Portal throughout.

Kind regards,

[redacted]
ATM Specialist

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com


Please consider the environment before printing this email.

[redacted]
ATM Specialist

M: +44 7503 424749
Email1: [redacted]

www.QinetiQ.com | Our blog | LinkedIn | Twitter

From: [redacted]
Sent: 06 March 2024 14:22
To: [redacted]
Subject: RE: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

Good Afternoon,

Please find attached comments from Boughton Parish Council.

Rgds

[redacted]
Clerk & RFO
Boughton Parish Council

From: [redacted]
Sent: Monday, March 4, 2024 9:17 PM
Subject: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

Dear Stakeholder,

You have been previously contacted as a key stakeholder in the Civil Airspace Publication (CAP) 1616 process for a permanent airspace change which is being sponsored by the Ministry of Defence in the vicinity of RAF Marham. This change under the identification number ACP-2023-022 proposes to establish a volume of airspace centred on RAF Marham which will enable a large Remotely Piloted Air System (RPAS), Protector RG Mk1, to access RAF Marham as a diversion airfield.

The ACP has progressed to Stage 2 as defined in CAP 1616. Stage 2 engagement material is now available on the CAA ACP Portal at this link:

ACP-2023-022 Stage 2 Engagement Material-1.0

The MOD is seeking your feedback on the information presented in the engagement letter to assist in development of the baseline scenarios and design options.

A Response Form is attached to the engagement material in Word format (and also to this email) which you might find useful for your feedback. Comments are welcome in any written form, directly in an email if you prefer. The postal address at the top of the engagement letter will periodically be monitored for hard copy responses. Please advise if you have any issues in accessing the engagement material via the CAA ACP Portal.

Email responses should be sent to:
The Airspace Change Manager at UASCDC-ACP@qinetiq.com

Stakeholders are requested to return any feedback by **Friday 5 April 2024**.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Please consider the environment before printing this email.

Enclosure 1 - ACP-2023-022: Stage 2 Engagement Feedback Response Form

ACP-2023-022 - Stage 2 Engagement Feedback Response Form	
Name	[redacted]
Representing	Cambridge Gliding Club
Address	Gransden Lodge Airfield
Email Address	[redacted]
Please refer to the design options indicated at Section 6. Which design option (1 or 2) is preferable to you? Please give your reasoning.	
Either – gliders operate below FL105 in this part of the UK	
Would you suggest any changes to either design option?	
No	
What thoughts do you have regarding the type of airspace being considered (Class G Danger Area)?	
Should be manageable if implemented properly	
Please give your feedback on the suitability of the Baseline Assessment.	
Please note that on days when the weather in East Anglia is suitable, gliders frequently cross to the north and east of Marham	
Do you have any other suggestions, concerns or comments?	
I think the following would be important to gliders who use this area: • The DACS from Marham ATC must be available at all times that the TDA is NOTAMed as active. • It must be clear that a request for entry will be granted unless the TDA is, or is about to be, actually used as a diversion for the Protector (not that it might be, if Waddington were to become unavailable). If it were the case that Waddington became unavailable, it shouldn't take long for any aircraft within the TDA to clear it.	

- Note that relatively few gliders are transponder equipped, and thus the carriage of a transponder shouldn't determine whether a crossing clearance should be granted (as is accepted by the Stage 2 document).
- The TDA shouldn't be used by Marham as a way of keeping aircraft out of their MATZ and the airspace above.

Archived: 28 March 2024 12:51:36
From: UASCDC-ACP UASCDC-ACP
Sent: 26 March 2024 11:08:19
To: UASCDC-ACP UASCDC-ACP
Subject: RE: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material
Sensitivity: Normal
Attachments:
Cambridge GC - ACP-2023-022 Stage 2 Engagement Feedback Response Form.docx ;

From: UASCDC-ACP
Sent: 21 March 2024 13:01
To: [redacted]
Subject: RE: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

[redacted]

Thank you for taking the time to respond to the Stage 2 engagement letter. Your comments will be taken into consideration before progressing the design(s) through to CAP1616 Stage 3, Consultation.

We will keep you appraised on the progression of the ACP at each stage, unless you advise you no longer wish to be contacted.

All documents will be made available to view on the CAA Portal throughout.

Kind regards,

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Please consider the environment before printing this email.

From: [redacted]
Sent: 15 March 2024 14:39
To: B[redacted]
Subject: Re: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

Please see the attached response

[redacted]

On Mon, 4 Mar 2024 at 21:19, [redacted] wrote:

> Dear Stakeholder,
>
> You have been previously contacted as a key stakeholder in the Civil Airspace Publication (CAP) 1616 process for a permanent airspace change which is being sponsored by the Ministry of Defence in the vicinity of RAF Marham. This change under the identification number ACP-2023-022 proposes to establish a volume of airspace centred on RAF Marham which will enable a large Remotely Piloted Air System (RPAS), Protector RG Mk1, to access RAF Marham as a diversion airfield.

The ACP has progressed to Stage 2 as defined in CAP 1616. Stage 2 engagement material is now available on the CAA ACP Portal at this link:

ACP-2023-022 Stage 2 Engagement Material-1.0

The MOD is seeking your feedback on the information presented in the engagement letter to assist in development of the baseline scenarios and design options.

A Response Form is attached to the engagement material in Word format (and also to this email) which you might find useful for your feedback. Comments are welcome in any written form, directly in an email if you prefer. The postal address at the top of the engagement letter will periodically be monitored for hard copy responses. Please advise if you have any issues in accessing the engagement material via the CAA ACP Portal.

Email responses should be sent to:
The Airspace Change Manager at UASCDC-ACP@qinetiq.com

Stakeholders are requested to return any feedback by **Friday 5 April 2024**.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Please consider the environment before printing this email.

Enclosure 1 - ACP-2023-022: Stage 2 Engagement Feedback Response Form

ACP-2023-022 - Stage 2 Engagement Feedback Response Form	
Name	[redacted]
Representing	British Gliding Association
Address	[redacted]
Email Address	[redacted]
Please refer to the design options indicated at Section 6. Which design option (1 or 2) is preferable to you? Please give your reasoning.	
Option 2 as this minimizes the volume of impacted airspace at any given point in time.	
Would you suggest any changes to either design option?	
Reduce the diameter of the design or slice off a sector to the south to reduce the impact on transiting traffic.	
What thoughts do you have regarding the type of airspace being considered (Class G Danger Area)?	
Given the RAF's Protector's lack of DAA equipage, there is currently no realistic alternative to class G DA.	
Please give your feedback on the suitability of the Baseline Assessment.	
The RAF Marham movements data supporting this ACP isn't entirely clear and includes non-military and non-public activity. Despite the availability of data, there is no indication in the ACP of the impact/exported risk to those having to fly around the DA.	
Do you have any other suggestions, concerns or comments?	
Four comments: 1. Clauses 8.2 & 8.3 of the consultation assume that pilots have a FRTOL and will be able to contact Marham Radar to get a crossing service or information on whether the Danger Area is active. Glider pilots are not required to hold a FRTOL. Without a FRTOL they cannot legally comply with DACS. Hence these mitigations do not help non-FRTOL-holding pilots at all. Therefore, the DA controlling authority *must cancel any unused DA activations or terminate them early once their drone is on the ground*. Offering a crossing service is not the same as cancelling the DA activation. That point about de-activation/termination needs responding to, please. 2. We have well-based concerns that Marham Radar would not grant entry to a non-transponding glider that called asking to enter the Danger Area while Protector was in the air. That point needs clarifying, please.	

3. Our experience is that military controllers like to control civil aircraft in a MATZ, attempt to tell civilian aircraft to stay outside it, or even attempt to control civil aircraft that are not in MATZ at all. For example:

https://www.airproxboard.org.uk/Documents/Download/1938/80fceb88-4fb1-4324-a296-c7d24b78e59e/2868

NB: "THE C182 INSTRUCTOR reports that on approaching the Marham MATZ, a zone transit was 'denied' by the Zone controller. They asked if it was acceptable to climb above the MATZ and remain in Class G airspace but were told this was not acceptable."

When this Danger area is implemented, we expect these excessive control activities will get worse, including when the DA is inactive as controllers will become used to having a DA to manage. We'd be grateful for reassurance on that point, please.

4. Having responded helpfully to the Waddington ACP, we object to the way this ACP has now appeared after the event. The Waddington and Marham DA ACPs should have been engaged on and consulted on together. The only very limited consultation here is that stakeholders are being asked about their preference for option 1 or 2.

We would not expect to see MoD and CAA AAA taking a similar approach to ACPs going forward.

We hope that is helpful.

Enclosure 1 - ACP-2023-022: Stage 2 Engagement Feedback Response Form

ACP-2023-022 - Stage 2 Engagement Feedback Response Form	
Name	[redacted]
Representing	Heli Air Ltd
Address	[redacted]
[redacted]	
Please refer to the design options indicated at Section 6. Which design option (1 or 2) is preferable to you? Please give your reasoning.	
Either option is acceptable. We require access to Marham every 2 weeks to conduct a low level oil pipeline survey. The pipeline terminates at the fuel store south of the 23 threshold. This pipeline forms part of the National Infrastructure and has to be patrolled for health safety compliance.	
Would you suggest any changes to either design option?	
What thoughts do you have regarding the type of airspace being considered (Class G Danger Area)?	
We could operate a booking in system with Marham to gain access to conduct the survey. At present we are in contact with Waddington on a weekly basis to negotiate access times into their RAT in order to conduct pipeline surveys.	
Please give your feedback on the suitability of the Baseline Assessment.	
For our pipeline surveys the Baseline Scenarios would work fine. Our pipeline surveys are conducted low level around 600ft agl	
Do you have any other suggestions, concerns or comments?	
Attached is the routing of our pipeline through Marham.	

Enclosure 1 - ACP-2023-022: Stage 2 Engagement Feedback Response Form

ACP-2023-022 - Stage 2 Engagement Feedback Response Form	
Name	[redacted]
Representing	Light Aircraft Association
Address	Turweston Aerodrome, Nr Brackley, Northants NN13 5YD
Email Address	[redacted]
Please refer to the design options indicated at Section 6. Which design option (1 or 2) is preferable to you? Please give your reasoning.	
Option 2 is preferred over Option 1 as it provides more flexible use of the requested airspace and thus potentially facilitates more GA transit through the lower portion. No information is given regarding Protector flight time, for descent or take off, in the airspace in order to quantify the benefit or any buffering / margin required for safety.	
Would you suggest any changes to either design option?	
Most GA VFR traffic will be operating at altitudes below 7000ft and so if the boundary between A & B were at or nearer this level it may further increase capacity for GA transits.	
What thoughts do you have regarding the type of airspace being considered (Class G Danger Area)?	
Together with the danger area crossing service this is probably the least worst situation for the projected activity levels with the negative of requiring pilots to contact the crossing service. Class C/D is however better in other respects for GA due to the predictability and the potential ability to obtain a crossing more simply whilst airborne.	
Please give your feedback on the suitability of the Baseline Assessment.	
Looking ten years ahead is potentially unrealistic with the lifetime of such system and the developing technologies so that a full DAA capability will hopefully obviate the need for DA in the shorter term. It would be useful to assess changes and present the result applicable in the event that a full DAA capability becomes available and particularly if the airspace would be released back to Class G which is the LAA position in general. Otherwise no comment.	
Do you have any other suggestions, concerns or comments?	
No further comments	

Enclosure 1 - ACP-2023-022: Stage 2 Engagement Feedback Response Form

ACP-2023-022 - Stage 2 Engagement Feedback Response Form	
Name	[redacted]
Representing	G-CFKZ flying group Based at East Winch
Address	[redacted]
Email Address	[redacted]

Please refer to the design options indicated at Section 6. Which design option (1 or 2) is preferable to you? Please give your reasoning.

2, having the split vertically is preferable to our group, we are often returning to East Winch with 30min fuel reserve so minimising any hold time will allow us to more safely plan our flight, for which we will now always need to factor the extra time as we will not know when it may be invoked. Our aircraft has a comparatively short range so knowing a Maximum hold time is very important for us, as is keeping the this hold time to a minimum.

Would you suggest any changes to either design option?

If there was a further modification to either or both options that was along the lines of below 1,500 AGL the drone will fly the standard circuit and thus the cylinder could be narrowed or become an over sized rectangle over the circuit then this would take East Winch out of the equation and allow us to maintain operations in and out of East Winch at 1,000ft AGL. providing both vertical and horizontal separation, Bouton aircraft would also be able to use East Winch as a diversion if needed. Has this been considered and discounted if so why?

What thoughts do you have regarding the type of airspace being considered (Class G Danger Area)?

As Class D has been ruled out the danger in Class G seems to be the only sensible remaining option.

Please give your feedback on the suitability of the Baseline Assessment.

Seems to be resalable, the only observation is that 2 aircraft are current out of commission at East Winch so when they return to service (at about the time the trial is due to start) there will be an increase in Zone crossings and landings at East Winch, however this will be marginal.

Do you have any other suggestions, concerns or comments?

Our concerns are that it appeared that Marham ATC were not aware of the requirement for the ATC to be ALWAYS maned when the danger zone was active. has this now been resolved?

Other concerns relate to the knock on effect this may have e.g. we are holding for the Drone, and possibly so will some F35'3 or other military aircraft. So we may end up with an extended hold time as the F35's will take priority, which in option one may be to long for our reserve with a safety margin.
What will be the worst case hold time that we can expect given drones and F35's?

Archived: 28 March 2024 12:52:17
From: UASCDC-ACP UASCDC-ACP
Sent: 26 March 2024 11:05:08
To: UASCDC-ACP UASCDC-ACP
Subject: RE: UC ACP-2023-022
Sensitivity: Normal
Attachments:
Enclosure 1 - ACP-2023-022 Stage 2 Engagement Feedback Response Form LAA.pdf;

From: UASCDC-ACP
Sent: 21 March 2024 12:55
To: [redacted]
Subject: RE: UC ACP-2023-022

[redacted],

Thank you for taking the time to respond to the Stage 2 engagement letter. Your comments will be taken into consideration before taking the design(s) through to CAP1616 Stage 3, Consultation.

We will keep you appraised on the progression of the ACP at each stage, unless you advise you no longer wish to be contacted.

All documents will be made available to view on the CAA Portal throughout.

Kind regards,

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Please consider the environment before printing this email.

From: [redacted]
Sent: 14 March 2024 12:54
To: UASCDC-ACP <UASCDC-ACP@qinetiq.com>
Subject: ACP-2023-022

Please find attached the LAA response to the above ACP.

Kind rgds,
[redacted]

Enclosure 1 - ACP-2023-022: Stage 2 Engagement Feedback Response Form

ACP-2023-022 - Stage 2 Engagement Feedback Response Form	
Name	[redacted] (Clerk to the Council)
Representing	Marham Parish Council
Address	
Email Address	[redacted]
Please refer to the design options indicated at Section 6. Which design option (1 or 2) is preferable to you? Please give your reasoning.	
The Council does not feel that it has the expertise to comment.	
Would you suggest any changes to either design option?	
As Above	
What thoughts do you have regarding the type of airspace being considered (Class G Danger Area)?	
As Above	
Please give your feedback on the suitability of the Baseline Assessment.	
As Above	
Do you have any other suggestions, concerns or comments?	
When asking for comment from non-experts could a summary be provided in layman's terms in future?	

Archived: 28 March 2024 12:52:43
From: UASCDC-ACP UASCDC-ACP
Sent: 26 March 2024 11:18:09
To: UASCDC-ACP UASCDC-ACP
Subject: RE: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material
Sensitivity: Normal
Attachments:
Marham PC - ACP-2023-022 Stage 2 Engagement Feedback Response Form.docx ;

From: UASCDC-ACP
Sent: 21 March 2024 12:08
To: Marham Parish Council [redacted]
Cc: UASCDC-ACP <UASCDC-ACP@qinetiq.com>
Subject: RE: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

[redacted]

Thank you for taking the time to respond to the Stage 2 engagement letter. Your comments will be recorded; in particular, your suggestions of a 'layman's terms' summary has been noted and a document has been prepared for distribution to stakeholders at Stage 3, Consultation commencing June 2024.

We will keep you appraised on the progression of the ACP at each stage, unless you advise you no longer wish to be contacted.

All documents will be made available to view on the CAA Portal throughout.

Kind regards,

[redacted]
ATM Specialist

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

From: Marham Parish Council <[redacted]>
Sent: 13 March 2024 12:29
To: [redacted]
Subject: Re: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

Dear [redacted],

please find attached comments.

Rgds

[redacted]

[redacted]
Marham Parish Council
Tel: [redacted]
Email [redacted]
marhamparishcouncil.norfolkparishes.gov.uk

On Mon, 4 Mar 2024 at 21:19, [redacted] > wrote:

> Dear Stakeholder,
>
> You have been previously contacted as a key stakeholder in the Civil Airspace Publication (CAP) 1616 process for a permanent airspace change which is being sponsored by the Ministry of Defence in the vicinity of RAF Marham. This change under the identification number ACP-2023-022 proposes to establish a volume of airspace centred on RAF Marham which will enable a large Remotely Piloted Air System (RPAS), Protector RG Mk1, to access RAF Marham as a diversion airfield.
>
> The ACP has progressed to Stage 2 as defined in CAP 1616. Stage 2 engagement material is now available on the CAA ACP Portal at this link:
>
> ACP-2023-022 Stage 2 Engagement Material-1.0
>
> The MOD is seeking your feedback on the information presented in the engagement letter to assist in development of the baseline scenarios and design options.
>
> A Response Form is attached to the engagement material in Word format (and also to this email) which you might find useful for your feedback. Comments are welcome in any written form, directly in an email if you prefer. The postal address at the top of the engagement letter will periodically be monitored for hard copy responses. Please advise if you have any issues in accessing the engagement material via the CAA ACP Portal.
>
> Email responses should be sent to:
> The Airspace Change Manager at UASCDC-ACP@qinetiq.com
>
> Stakeholders are requested to return any feedback by **Friday 5 April 2024**.
>
> Defence UAS Capability Development Centre
> Email: UASCDC-ACP@qinetiq.com

UAS CDC

Please consider the environment before printing this email.

From: [redacted]>
Sent: Monday, March 4, 2024 9:17 PM
Subject: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

> You don't often get email from tsbradley@qinetiq.com. Learn why this is important

Dear Stakeholder,

You have been previously contacted as a key stakeholder in the Civil Airspace Publication (CAP) 1616 process for a permanent airspace change which is being sponsored by the Ministry of Defence in the vicinity of RAF Marham. This change under the identification number ACP-2023-022 proposes to establish a volume of airspace centred on RAF Marham which will enable a large Remotely Piloted Air System (RPAS), Protector RG Mk1, to access RAF Marham as a diversion airfield.

The ACP has progressed to Stage 2 as defined in CAP 1616. Stage 2 engagement material is now available on the CAA ACP Portal at this link:

ACP-2023-022 Stage 2 Engagement Material-1.0

The MOD is seeking your feedback on the information presented in the engagement letter to assist in development of the baseline scenarios and design options.

A Response Form is attached to the engagement material in Word format (and also to this email) which you might find useful for your feedback. Comments are welcome in any written form, directly in an email if you prefer. The postal address at the top of the engagement letter will periodically be monitored for hard copy responses. Please advise if you have any issues in accessing the engagement material via the CAA ACP Portal.

Email responses should be sent to:
The Airspace Change Manager at UASCDC-ACP@qinetiq.com

Stakeholders are requested to return any feedback by **Friday 5 April 2024**.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Please consider the environment before printing this email.

Archived: 28 March 2024 12:53:33
From: [redacted]
Sent: 22 March 2024 07:14:49
To: UASCDC-ACP
Subject: Consultations Response - UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material
Response requested: No
Sensitivity: Normal
Attachments:
Enclosure 1 - ACP-2023-022 Stage 2 Engagement Feedback Response Form.docx ;Annex A to standard letters - Jan 24 FINAL.pdf ;469365 NE Response.pdf ;

Please find Natural England's response in relation to the above mentioned consultation attached.

Kind regards,

[redacted]

Adviser
Operations Delivery, Consultations Team
Natural England
County Hall
Spetchley Road
Worcester
WR5 2NP

Tel 0300 0603900

mail to: consultations@naturalengland.org.uk

www.gov.uk/natural-england

Natural England offers two chargeable services - the Discretionary Advice Service, which provides pre-application and post-consent advice on planning/licensing proposals to developers and consultants, and the Pre-submission Screening Service for European Protected Species mitigation licence applications. These services help applicants take appropriate account of environmental considerations at an early stage of project development, reduce uncertainty, the risk of delay and added cost at a later stage, whilst securing good results for the natural environment.

For further information on the Discretionary Advice Service see here
For further information on the Pre-submission Screening Service see here

recorded to secure the effective operation of the system and for other lawful purposes.

Archived: 28 March 2024 12:54:09
From: UASCDC-ACP UASCDC-ACP
Sent: 26 March 2024 14:05:37
To: UASCDC-ACP UASCDC-ACP
Subject: RE: UC FW: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material
Sensitivity: Normal
Attachments:
Enclosure 1 - ACP-2023-022 Stage 2 Engagement Feedback Response Form - Shouldham PC.docx ;

From: UASCDC-ACP
Sent: 26 March 2024 14:01
To: [redacted]
Subject: RE: UC FW: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

[redacted]

Thank you for taking the time to respond to the Stage 2 engagement letter on behalf of Shouldham Parish Council. Your comments will be recorded; in particular, your suggestions of a 'layman's terms' summary has been noted and a document has been prepared for distribution to stakeholders at Stage 3, Consultation commencing June 2024.

We will keep you appraised on the progression of the ACP at each stage, unless you advise you no longer wish to be contacted.

All documents will be made available to view on the CAA Portal throughout.

Kind regards,

[redacted]
ATM Airspace Specialist
(she/her)
I work flexibly and may send emails outside of normal working hours.
Your immediate response is not expected.
Mob: [redacted]
www.QinetiQ.com | Our blog | LinkedIn | Twitter

From: [redacted]>
Sent: 21 March 2024 13:27
To: UASCDC-ACP <UASCDC-ACP@qinetiq.com>
Subject: RE: UC FW: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

Good afternoon,

The Shouldham Parish Council feedback is attached.

Rgds

[redacted]
Clerk and RFO
Shouldham Parish Council

From: UASCDC-ACP <UASCDC-ACP@qinetiq.com>
Sent: Thursday, March 21, 2024 1:10 PM
Subject: UC FW: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

Dear Stakeholder,

This is a gentle reminder that feedback is encouraged regarding the suggested Design Options for the airspace proposed at ACP-2023-022. If you do have any comments, and have not already done so, please send them by return of email by Friday 5 April 2024.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Please consider the environment before printing this email.

From: [redacted]
Sent: 04 March 2024 21:17
Subject: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

Dear Stakeholder,

You have been previously contacted as a key stakeholder in the Civil Airspace Publication (CAP) 1616 process for a permanent airspace change which is being sponsored by the Ministry of Defence in the vicinity of RAF Marham. This change under the identification number ACP-2023-022 proposes to establish a volume of airspace centred on RAF Marham which will enable a large Remotely Piloted Air System (RPAS), Protector RG Mk1, to access RAF Marham as a diversion airfield.

The ACP has progressed to Stage 2 as defined in CAP 1616. Stage 2 engagement material is now available on the CAA ACP Portal at this link:

ACP-2023-022 Stage 2 Engagement Material-1.0

The MOD is seeking your feedback on the information presented in the engagement letter to assist in development of the baseline scenarios and design options.

A Response Form is attached to the engagement material in Word format (and also to this email) which you might find useful for your feedback. Comments are welcome in any written form, directly in an email if you prefer. The postal address at the top of the engagement letter will periodically be monitored for hard copy responses. Please advise if you have any issues in accessing the engagement material via the CAA ACP Portal.

Email responses should be sent to:
The Airspace Change Manager at UASCDC-ACP@qinetiq.com

Stakeholders are requested to return any feedback by **Friday 5 April 2024**.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Please consider the environment before printing this email.

Archived: 09 April 2024 21:51:18
From: [redacted]
Sent: 07 March 2024 12:06:00
To: [redacted]
[redacted] ACP-2023-022 Stage 2 Develop and Assess - Engagement Material
Response requested: No
Sensitivity: Normal

[redacted]

That's great, thanks for letting us know.

Kind regards,

[redacted]
ATM Specialist

M: [redacted]

www.QinetiQ.com | Our blog | LinkedIn | Twitter

From: [redacted]
Sent: 07 March 2024 11:39
To: [redacted]>
Subject: RE: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

[redacted]

Thanks for this. Please be aware that our operator, Babcock, are actioning this on our behalf, which should at least save some email traffic that you don't need!

Regards

[redacted]
Aviation Advisor

East Anglian Air Ambulance
Helimed House
Gambling Close
Norwich Airport
Norfolk
NR6 6EG

M: [redacted]

EAAA: [redacted]

From: [redacted]>
Sent: Monday, March 4, 2024 9:17 PM
Subject: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

Dear Stakeholder,

You have been previously contacted as a key stakeholder in the Civil Airspace Publication (CAP) 1616 process for a permanent airspace change which is being sponsored by the Ministry of Defence in the vicinity of RAF Marham. This change under the identification number ACP-2023-022 proposes to establish a volume of airspace centred on RAF Marham which will enable a large Remotely Piloted Air System (RPAS), Protector RG Mk1, to access RAF Marham as a diversion airfield.

The ACP has progressed to Stage 2 as defined in CAP 1616. Stage 2 engagement material is now available on the CAA ACP Portal at this link:

ACP-2023-022 Stage 2 Engagement Material-1.0

The MOD is seeking your feedback on the information presented in the engagement letter to assist in development of the baseline scenarios and design options.

A Response Form is attached to the engagement material in Word format (and also to this email) which you might find useful for your feedback. Comments are welcome in any written form, directly in an email if you prefer. The postal address at the top of the engagement letter will periodically be monitored for hard copy responses. Please advise if you have any issues in accessing the engagement material via the CAA ACP Portal.

Email responses should be sent to:
The Airspace Change Manager at UASCDC-ACP@qinetiq.com

Stakeholders are requested to return any feedback by **Friday 5 April 2024**.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

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against viruses.

East Anglian Air Ambulance is a registered charity: number 1083876, and the registered office is Helimed House, Hangar 14, Gambling Close, Norwich Airport, Norwich, Norfolk, NR6 6EG

change under the identification number ACP-2023-022 proposes to establish a volume of airspace centred on RAF Marham which will enable a large Remotely Piloted Air System (RPAS), Protector RG Mk1, to access RAF Marham as a diversion airfield.

The ACP has progressed to Stage 2 as defined in CAP 1616. Stage 2 engagement material is now available on the CAA ACP Portal at this link:

ACP-2023-022 Stage 2 Engagement Material-1.0

The MOD is seeking your feedback on the information presented in the engagement letter to assist in development of the baseline scenarios and design options.

A Response Form is attached to the engagement material in Word format (and also to this email) which you might find useful for your feedback. Comments are welcome in any written form, directly in an email if you prefer. The postal address at the top of the engagement letter will periodically be monitored for hard copy responses. Please advise if you have any issues in accessing the engagement material via the CAA ACP Portal.

Email responses should be sent to:
The Airspace Change Manager at UASCDC-ACP@qinetiq.com

Stakeholders are requested to return any feedback by **Friday 5 April 2024**.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Please consider the environment before printing this email.

Archived: 28 March 2024 12:41:01
From: UASCDC-ACP UASCDC-ACP
Sent: 26 March 2024 14:06:01
To: UASCDC-ACP UASCDC-ACP
Subject: RE: UC ACP-2023-022
Sensitivity: Normal
Attachments:
ACP-2023-022.msg ;

From: UASCDC-ACP
Sent: 26 March 2024 14:01
To: [redacted]
Subject: RE: UC ACP-2023-022

[redacted]

Thank you for taking the time to respond to the Stage 2 engagement letter.

We will keep you appraised on the progression of the ACP at each stage, unless you advise you no longer wish to be contacted.

All documents will be made available to view on the CAA Portal throughout.

Kind regards,

[redacted]
ATM Airspace Specialist
(she/her)
I work flexibly and may send emails outside of normal working hours.
Your immediate response is not expected.
Mob: [redacted]
www.QinetiQ.com | Our blog | LinkedIn | Twitter

From: [redacted]
Sent: 21 March 2024 14:57
To: UASCDC-ACP <UASCDC-ACP@qinetiq.com>
Subject: ACP-2023-022

Dear Sir,

Please find attached our response and pipeline routing.

Kind regards,

[redacted]
Director : Chief Pilot

Heli Air Limited

[redacted]

www.heliair.com

Heli Air Ltd
Registered Office: Wellesbourne Airfield, Loxley Lane, Wellesbourne, Warwickshire CV35 9EU
Registered Number: 2028932

Date: 22 March 2024
Our ref: 469365
Your ref: ACP-2023-022

UAS Capability Development Centre

BY EMAIL ONLY
UASCDC-ACP@qinetiq.com

Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 3900

Dear Sir/Madam

Consultation: ACP-2023-022 Stage 2 Develop and Assess - Engagement Material
Location: RAF Markham

Thank you for your consultation on the above dated and received by Natural England on 08 March 2024.

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

SUMMARY OF NATURAL ENGLAND'S ADVICE

NO OBJECTION

Based on the plans submitted, Natural England considers that the proposed development will not have significant adverse impacts on statutorily protected nature conservation sites or landscapes.

Natural England's generic advice on other natural environment issues is set out at Annex A.

Sites of Special Scientific Interest Impact Risk Zones
The Town and Country Planning (Development Management Procedure) (England) Order 2015 requires local planning authorities to consult Natural England on "Development in or likely to affect a Site of Special Scientific Interest" (Schedule 4, w). Our SSSI Impact Risk Zones are a GIS dataset designed to be used during the planning application validation process to help local planning authorities decide when to consult Natural England on developments likely to affect a SSSI. The dataset and user guidance can be accessed from the data.gov.uk website

Further general advice on the consideration of protected species and other natural environment issues is provided at Annex A.

We would be happy to comment further should the need arise but if in the meantime you have any queries please do not hesitate to contact us.

For any queries regarding this letter, for new consultations, or to provide further information on this consultation please send your correspondences to consultations@naturalengland.org.uk.

Yours faithfully
Sally Wintle
Consultations Team

Archived: 05 March 2024 11:14:07
From: [redacted]
Sent: 05 March 2024 10:59:56
To: [redacted]
Cc: [redacted]
Subject: RE: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material
Sensitivity: Normal

[redacted]

Thank you for your swift response and for your support in this proposal.

We will keep you appraised on the progression of the ACP at each stage, unless you advise you no longer wish to be contacted. All documents will be made available to view on the CAA Portal throughout.

Kind regards,

[redacted]
ATM Specialist

M: [redacted]

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From: [redacted]
Sent: 05 March 2024 10:44
To: [redacted]
Subject: RE: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

[redacted]

The BHA fully supports this ACP.

[redacted]
Chief Executive
British Helicopter Association
Unit C2
Fairoaks Airport
Chobham
Surrey. GU24 8HU

[redacted]

From: [redacted]
Sent: Monday, March 4, 2024 9:18 PM
Subject: UC ACP-2023-022 Stage 2 Develop and Assess - Engagement Material

Dear NATMAC member,

You have been previously contacted as a key stakeholder in the Civil Airspace Publication (CAP) 1616 process for a permanent airspace change which is being sponsored by the Ministry of Defence in the vicinity of RAF Marham. This change under the identification number ACP-2023-022 proposes to establish a volume of airspace centred on RAF Marham which will enable a large Remotely Piloted Air System (RPAS), Protector RG Mk1, to access RAF Marham as a diversion airfield.

The ACP has progressed to Stage 2 as defined in CAP 1616. Stage 2 engagement material is now available on the CAA ACP Portal at this link:

ACP-2023-022 Stage 2 Engagement Material-1.0

The MOD is seeking your feedback on the information presented in the engagement letter to assist in development of the baseline scenarios and design options. NATMAC representatives are politely requested to ensure the information is disseminated to their members.

A Response Form is attached to the engagement material in Word format (and also to this email) which you might find useful for your feedback. Comments are welcome in any written form, directly in an email if you prefer. The postal address at the top of the engagement letter will periodically be monitored for hard copy responses. Please advise if you have any issues in accessing the engagement material via the CAA ACP Portal.

Email responses should be sent to:
The Airspace Change Manager at UASCDC-ACP@qinetiq.com

Stakeholders are requested to return any feedback by **Friday 5 April 2024**.

Defence UAS Capability Development Centre
Email: UASCDC-ACP@qinetiq.com

UAS CDC

Please consider the environment before printing this email.

Enclosure 1 - ACP-2023-022: Stage 2 Engagement Feedback Response Form

ACP-2023-022 - Stage 2 Engagement Feedback Response Form	
Name	[redacted]
Representing	Boughton Parish Council (Clerk)
Address	
Email Address	[redacted]
Please refer to the design options indicated at Section 6. Which design option (1 or 2) is preferable to you? Please give your reasoning.	
Option 1. From the Council's perspective RAF Marham airspace is not excessively busy nor is it envisaged that the Marham diversion airfield for Protector would be used frequently enough to warrant increasing the risk with Option 2 by having anything (potentially armed) in the stack either below or above the RPAS.	
Would you suggest any changes to either design option?	
No	
What thoughts do you have regarding the type of airspace being considered (Class G Danger Area)?	
Whilst Protector has TCAS not all of the airspace users are equipped with TCAS. However, beyond that the Council doesn't have the expertise to comment.	
Please give your feedback on the suitability of the Baseline Assessment.	
The Council considers itself unqualified to comment on the overall suitability of the Base line assessment.	
Do you have any other suggestions, concerns or comments?	
As this is a technical document and the Council are being asked to comment then it would be helpful if an executive summary in layman's terms could be provided.	

Enclosure 1 - ACP-2023-022: Stage 2 Engagement Feedback Response Form

ACP-2023-022 - Stage 2 Engagement Feedback Response Form	
Name	[redacted] Director of Flight Operations Babcock Onshore
Representing	EAAA at Norwich and Cambridge
Address	Babcock Onshore Ltd, [redacted]
Email Address	[redacted]
Please refer to the design options indicated at Section 6. Which design option (1 or 2) is preferable to you? Please give your reasoning.	
Due to the height that our aircraft operate we do not have a preference between Option 1 or 2	
Would you suggest any changes to either design option?	
N/A	
What thoughts do you have regarding the type of airspace being considered (Class G Danger Area)?	
As a HEMS/ AA operator we do not have any concerns so long as we can enter the area if responding to an incident as Cat A priority flight through access of a SUACS.	
Please give your feedback on the suitability of the Baseline Assessment.	
Key to our operations is access when needed to the restricted airspace. We believe that the SUACS is key to this.	
Do you have any other suggestions, concerns or comments?	
Nil	

Enclosure 1 - ACP-2023-022: Stage 2 Engagement Feedback Response Form

ACP-2023-022 - Stage 2 Engagement Feedback Response Form	
Name	[redacted]
Representing	NATS NERL plc
Address	4000 Parkway, Whiteley, Fareham PO15 7FL
Email Address	[redacted]
Please refer to the design options indicated at Section 6. Which design option (1 or 2) is preferable to you? Please give your reasoning.	
Option 2 appears to be less restrictive and more aligned with FUA principles. The management processes will need to be addressed so that the status of the airspace is clear to airspace users and airspace managers.	
Would you suggest any changes to either design option?	
No	
What thoughts do you have regarding the type of airspace being considered (Class G Danger Area)?	
The sponsor is required to consider a segregated airspace option for this type of activity due to current CAA (Civil Aviation Authority) regulations and policy. This contradicts the intent of the UK Airspace Modernisation Strategy (AMS) which promotes integration. The proliferation of additional SUA structures, as a result, comes with disbenefits to the wider network and undermines sustainability ambitions. A lack of Detect and Avoid (DAA) capability restricts any other solution outside of Controlled Airspace (CAS) (based on the MOD's approval to fly Protector in CAS). Increased access to other areas/airfields elsewhere could conflict with AMS implementation. Controlled airspace might provide an integration solution.	
Please give your feedback on the suitability of the Baseline Assessment.	
Another AMS objective is the implementation of Free Route Airspace to as low a level as is possible. NERL would consider this viable at FL195+ and intend to implement this in the future. The establishment of additional SUAs potentially undermines the efficacy of this capability and the associated benefits to operators in the vicinity e.g. Norwich Airport operations.	
Do you have any other suggestions, concerns or comments?	
Although this ACP (Airspace Change Proposal) considers segregated airspace in Class G airspace, NATS continues to note the challenges of integration and proposed flight in Temporary Reserved Areas (TRAs) with the need to segregate BLVOS without DAA capability. CAA policy requires military uncrewed, non-DAA, and civil crewed aircraft from operating in TRAs although TRAs are not segregated. Increasing non-DAA RPAS will exacerbate these challenges.	

Enclosure 1 - ACP-2023-022: Stage 2 Engagement Feedback Response Form

ACP-2023-022 - Stage 2 Engagement Feedback Response Form	
Name	[redacted]
Representing	Shouldham Parish Council
Address	
Email Address	[redacted]
Please refer to the design options indicated at Section 6. Which design option (1 or 2) is preferable to you? Please give your reasoning.	
Council doesn't feel sufficiently knowledgeable on the subject matter to make an informed decision.	
Would you suggest any changes to either design option?	
Council doesn't feel sufficiently knowledgeable on the subject matter to make an informed decision.	
What thoughts do you have regarding the type of airspace being considered (Class G Danger Area)?	
Council doesn't feel sufficiently knowledgeable on the subject matter to make an informed decision.	
Please give your feedback on the suitability of the Baseline Assessment.	
Council doesn't feel sufficiently knowledgeable on the subject matter to make an informed decision.	
Do you have any other suggestions, concerns or comments?	
Council would appreciate an executive summary in layman's terms to offer comment on future stages of consultation.	

The file contains archived copy of 5 item(s) from folder Inbox\ACP-2023-022 Perm Div\Stage 2\Responses NFC.

The attachments of an item are attached to the PDF file in the package associated to the item.

The date of archiving is 09 April 2024.

Annex A –Natural England general advice

Protected Landscapes
Paragraph 182 of the National Planning Policy Framework (NPPF) requires great weight to be given to conserving and enhancing landscape and scenic beauty within Areas of Outstanding Natural Beauty (known as National Landscapes), National Parks, and the Broads and states that the scale and extent of development within all these areas should be limited. Paragraph 183 requires exceptional circumstances to be demonstrated to justify major development within a designated landscape and sets out criteria which should be applied in considering relevant development proposals. Section 245 of the Levelling Up and Regeneration Act 2023 places a duty on relevant authorities (including local planning authorities) to seek to further the statutory purposes of a National Park, the Broads or an Area of Outstanding Natural Beauty in England in exercising their functions. This duty also applies to proposals outside the designated area but impacting on its natural beauty.

The local planning authority should carefully consider any impacts on the statutory purposes of protected landscapes and their settings in line with the NPPF, relevant development plan policies and the Section 245 duty. The relevant National Landscape Partnership or Conservation Board may be able to offer advice on the impacts of the proposal on the natural beauty of the area and the aims and objectives of the statutory management plan, as well as environmental enhancement opportunities. Where available, a local Landscape Character Assessment can also be a helpful guide to the landscape's sensitivity to development and its capacity to accommodate proposed development.

Wider landscapes
Paragraph 180 of the NPPF highlights the need to protect and enhance valued landscapes through the planning system. This application may present opportunities to protect and enhance locally valued landscapes, including any local landscape designations. You may want to consider whether any local landscape features or characteristics (such as ponds, woodland, or dry-stone walls) could be incorporated into the development to respond to and enhance local landscape character and distinctiveness, in line with any local landscape character assessments. Where the impacts of development are likely to be significant, a Landscape and Visual Impact Assessment should be provided with the proposal to inform decision making. We refer you to the Landscape Institute Guidelines for Landscape and Visual Impact Assessment for further guidance.

Biodiversity duty
The local planning authority has a duty to conserve and enhance biodiversity as part of its decision making. Further information is available here.

Designated nature conservation sites
Paragraphs 186-188 of the NPPF set out the principles for determining applications impacting on Sites of Special Scientific Interest (SSSI) and habitats sites. Both the direct and indirect impacts of the development should be considered. A Habitats Regulations Assessment is needed where there is a likely significant effect on a habitats site and Natural England must be consulted on 'appropriate assessments'. Natural England must also be consulted where development is in or likely to affect a SSSI and provides advice on potential impacts on SSSIs either via Impact Risk Zones or as standard or bespoke consultation responses.

Protected Species
Natural England has produced standing advice to help planning authorities understand the impact of particular developments on protected species. Natural England will only provide bespoke advice on protected species where they form part of a Site of Special Scientific Interest or in exceptional circumstances. A protected species licence may be required in certain cases.

Local sites and priority habitats and species
The local planning authority should consider the impacts of the proposed development on any local wildlife or geodiversity site, in line with paragraphs 180, 181 and 185 of the NPPF and any relevant development plan policy. There may also be opportunities to enhance local sites and improve their connectivity to help nature's recovery. Natural England does not hold locally specific information on local sites and recommends further information is obtained from appropriate bodies such as the local records centre,

wildlife trust, geoconservation groups or recording societies. Emerging Local Nature Recovery Strategies may also provide further useful information.

Priority habitats and species are of particular importance for nature conservation and are included in the England Biodiversity List published under section 41 of the Natural Environment and Rural Communities Act 2006. Most priority habitats will be mapped either as Sites of Special Scientific Interest on the Magic website or as Local Wildlife Sites. A list of priority habitats and species can be found on Gov.uk.

Natural England does not routinely hold species data. Such data should be collected when impacts on priority habitats or species are considered likely. Consideration should also be given to the potential environmental value of brownfield sites, often found in urban areas and former industrial land, further information including links to the open mosaic habitats inventory can be found here.

Biodiversity and wider environmental gains

Development should provide net gains for biodiversity in line with the NPPF paragraphs 180(d), 185 and 186. Major development (defined in the NPPF glossary) is required by law to deliver a biodiversity gain of at least 10% from 12 February 2024 and this requirement is expected to be extended to smaller scale development in spring 2024. For nationally significant infrastructure projects (NSIPs), it is anticipated that the requirement for biodiversity net gain will be implemented from 2025.

Further information on biodiversity net gain, including draft Planning Practice Guidance, can be found here.

The statutory Biodiversity Metric should be used to calculate biodiversity losses and gains for terrestrial and intertidal habitats and can be used to inform any development project. For small development sites, the Small Sites Metric may be used. This is a simplified version of the Biodiversity Metric and is designed for use where certain criteria are met.

The mitigation hierarchy as set out in paragraph 186 of the NPPF should be followed to firstly consider what existing habitats within the site can be retained or enhanced. Where on-site measures are not possible, provision off-site will need to be considered.

Development also provides opportunities to secure wider biodiversity enhancements and environmental gains, as outlined in the NPPF (paragraphs 8, 74, 108, 124, 180, 181 and 186). Opportunities for enhancement might include incorporating features to support specific species within the design of new buildings such as swift or bat boxes or designing lighting to encourage wildlife.

Natural England's Environmental Benefits from Nature tool may be used to identify opportunities to enhance wider benefits from nature and to avoid and minimise any negative impacts. It is designed to work alongside the Biodiversity Metric and is available as a beta test version.

Further information on biodiversity net gain, the mitigation hierarchy and wider environmental net gain can be found in government Planning Practice Guidance for the natural environment.

Ancient woodland, ancient and veteran trees

The local planning authority should consider any impacts on ancient woodland and ancient and veteran trees in line with paragraph 186 of the NPPF. Natural England maintains the Ancient Woodland Inventory which can help identify ancient woodland. Natural England and the Forestry Commission have produced standing advice for planning authorities in relation to ancient woodland and ancient and veteran trees. It should be taken into account when determining relevant planning applications. Natural England will only provide bespoke advice on ancient woodland, ancient and veteran trees where they form part of a Site of Special Scientific Interest or in exceptional circumstances.

Best and most versatile agricultural land and soils

Local planning authorities are responsible for ensuring that they have sufficient detailed agricultural land classification (ALC) information to apply NPPF policies (Paragraphs 180 and 181). This is the case regardless of whether the proposed development is sufficiently large to consult Natural England.

Annex A –Natural England general advice

Further information is contained in GOV.UK guidance Agricultural Land Classification information is available on the Magic website and the Data.Gov.uk website

Guidance on soil protection is available in the Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites, and we recommend its use in the design and construction of development, including any planning conditions. For mineral working and landfilling, separate guidance on soil protection for site restoration and aftercare is available on Gov.uk website. Detailed guidance on soil handling for mineral sites is contained in the Institute of Quarrying *Good Practice Guide for Handling Soils in Mineral Workings*.

Should the development proceed, we advise that the developer uses an appropriately experienced soil specialist to advise on, and supervise soil handling, including identifying when soils are dry enough to be handled and how to make the best use of soils on site.

Green Infrastructure
Natural England's Green Infrastructure Framework provides evidence-based advice and tools on how to design, deliver and manage green and blue infrastructure (GI). GI should create and maintain green liveable places that enable people to experience and connect with nature, and that offer everyone, wherever they live, access to good quality parks, greenspaces, recreational, walking and cycling routes that are inclusive, safe, welcoming, well-managed and accessible for all. GI provision should enhance ecological networks, support ecosystems services and connect as a living network at local, regional and national scales.

Development should be designed to meet the 15 Green Infrastructure Principles. The GI Standards can be used to inform the quality, quantity and type of GI to be provided. Major development should have a GI plan including a long-term delivery and management plan. Relevant aspects of local authority GI strategies should be delivered where appropriate.

GI mapping resources are available here and here. These can be used to help assess deficiencies in greenspace provision and identify priority locations for new GI provision.

Access and Recreation
Natural England encourages any proposal to incorporate measures to help improve people's access to the natural environment. Measures such as reinstating existing footpaths, together with the creation of new footpaths and bridleways should be considered. Links to urban fringe areas should also be explored to strengthen access networks, reduce fragmentation, and promote wider green infrastructure.

Rights of Way, Access land, Coastal access and National Trails
Paragraphs 104 and 180 of the NPPF highlight the important of public rights of way and access. Development should consider potential impacts on access land, common land, rights of way and coastal access routes in the vicinity of the development. Consideration should also be given to the potential impacts on the any nearby National Trails. The National Trails website www.nationaltrail.co.uk provides information including contact details for the National Trail Officer. Appropriate mitigation measures should be incorporated for any adverse impacts.

Further information is set out in Planning Practice Guidance on the natural environment

Archived: 28 March 2024 12:12:50
From: [redacted]
Sent: 07 March 2024 17:14:58
To: UASCDC-ACP
Subject: Babcock Onshore ACP-2023-022 (UNCLASSIFIED)
Response requested: Yes
Sensitivity: Normal
Attachments:
Enclosure 1 - ACP-2023-022 Stage 2 Engagement Feedback Response Form Babcock Onshore 07032024.docx ;

Classification:UNCLASSIFIED

Hi there,

Please find attached our Stage 2 comments.

BW,

[redacted]

[redacted] | Director of Flight Operations
UK Aviation | Aviation
Babcock International Group
Babcock Onshore | Building Se32-33 | Gloucestershire Airport | Cheltenham | Gloucestershire | GL51 6SP
Mob: [redacted]
www.babcockinternational.com

babcock™

Creating a safe and secure world, together

Updates on MOD Airspace Change Proposals
ACP-2023-047 &
ACP-2023-022

[redacted]
Unmanned Air Systems Capability Development Centre

Airspace Integration for Protector RG Mk1 presentation to the EAAWG
16 Jan 2024

Protector RG Mk1 Remotely Piloted Air System (RPAS)

- Main Operating Base RAF Waddington
- Training areas all around UK eventually
- Limited Detect and Avoid (DAA)
- Aircrews are located on the ground
- Certification
- Segregation required

Protector RG Mk1 Remotely Piloted Air System (RPAS)

UK MAA Regulation:

- MAA Regulatory Publications (MRP) - RA 2320 – MAA regulation for operation of military RPAS. The RA states the criteria **for beyond visual line of sight (BVLOS**) RPAS operation such that within UK airspace, BVLOS operations should:
    - An appropriately **approved Detect and Avoid (DAA)** capability enables compliance with Rules of the Air appropriate to the class of airspace, or;
    - They are flown using a Layered Safety Approach that specifically requires flight in **Segregated Airspace,** or in Controlled Airspace (Classes A-D) with the informed consent of the Air Navigation Services Provider (ANSP) .

ROYAL AIR FORCE

Key Protector Performance Data

Cruise speed: 165kts
Max Speed: 210kts
Climb Rate: Surface to FL200; 1200fpm and above FL200: 640fpm
Descent Rate: 600 – 1100fpm
Turn Radius: 2nm
Glide Ratio: 3.5nm/1000ft

- Will be a certified aircraft by the MAA in exactly the same way as a Manned Aircraft is certified today.
- Can aviate, navigate and communicate in the same way as a conventionally flown aircraft.
- Can respond to Air Traffic Control (ATC) instructions and clearances, accept Secondary Surveillance Radar codes and any ATC deviations.
- Will be controlled at all times by RAF qualified pilots from a Certified Ground Control System at RAF Waddington.

ROYAL AIR FORCE

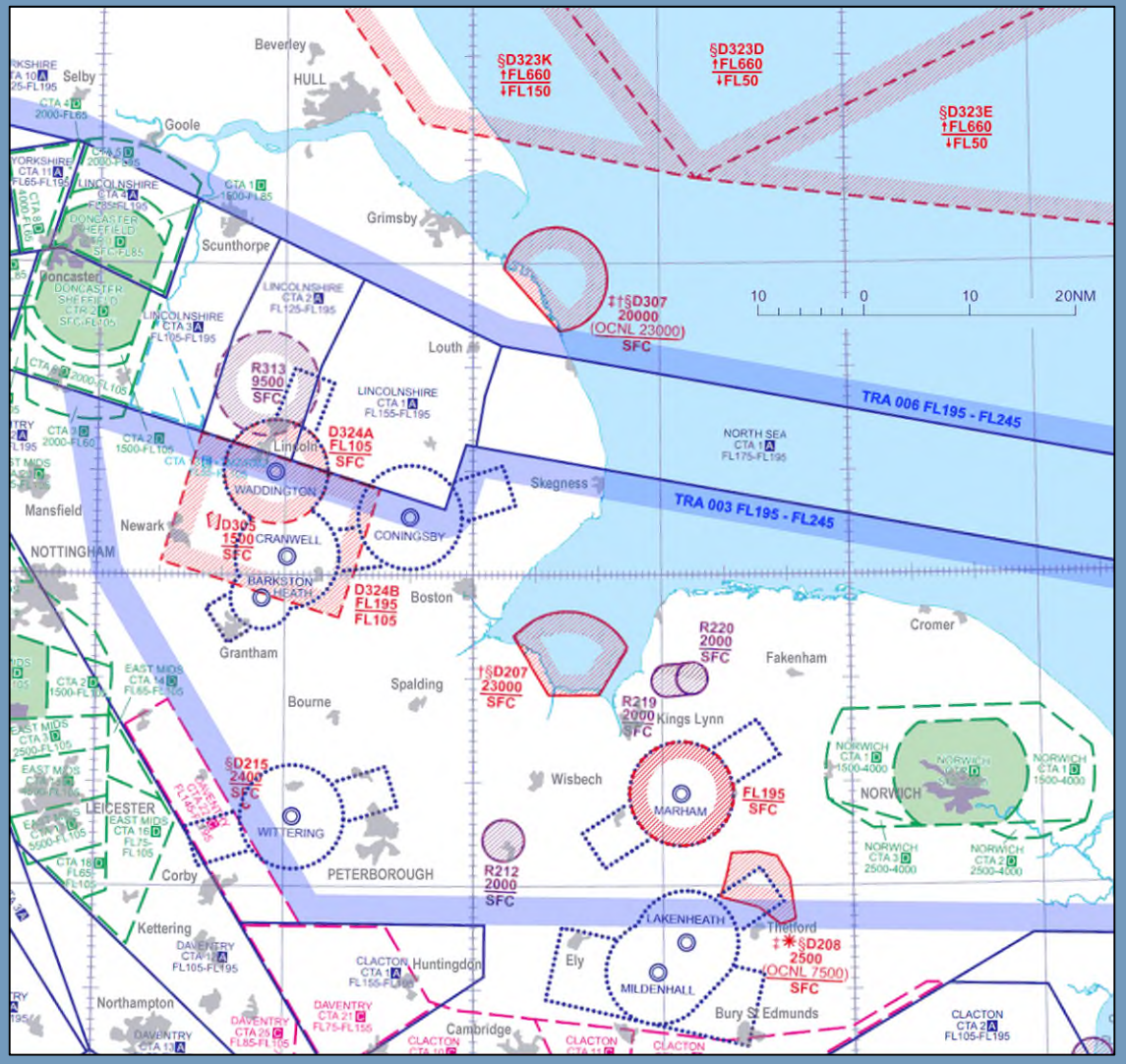
Airspace Change Process – CAP1616

All changes to airspace in the UK must follow the CAP1616 process

- **Permanent changes follow a 7 stage process – 24 months**
- **Temporary changes follow a scaled down version – 6 months**

ROYAL AIR FORCE

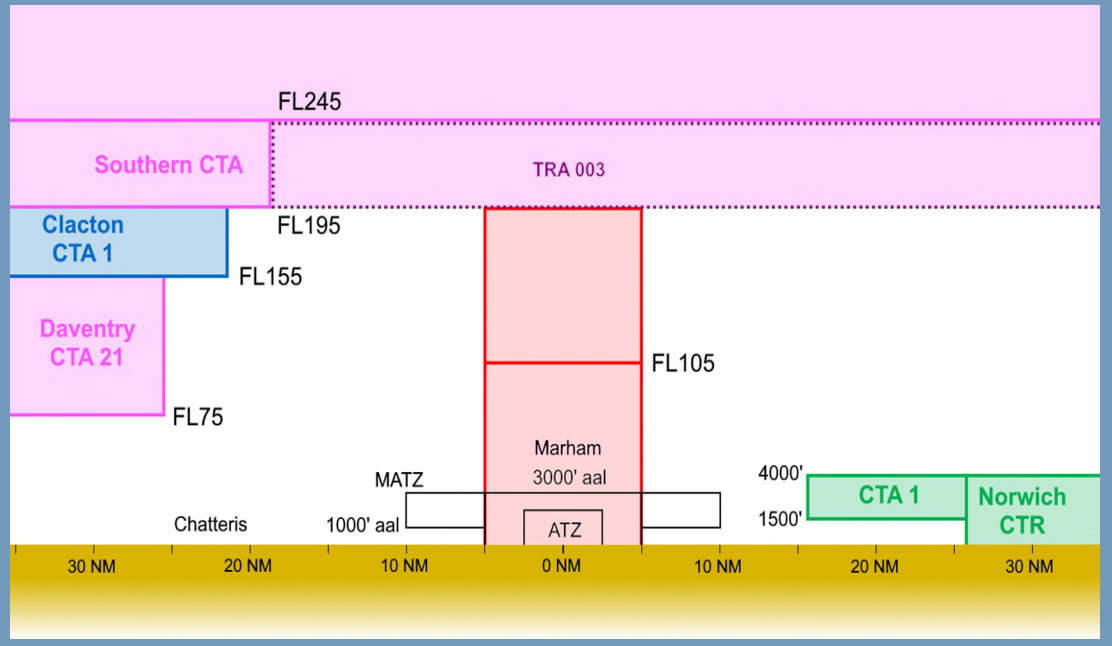
Protector operating area(s) – why Marham?



2 Separate changes in train

- ACP-2023-047 – temporary structure of airspace to be implemented over Marham May – Aug 2024 to trial the proposed airspace:

- ACP-2023-022 – permanent structure to follow once trial has completed



ROYAL AIR FORCE

ACP-2023-047 - Aim

To introduce a volume of airspace in the form of a TDA overhead RAF Marham to enable the MOD to demonstrate that the airspace, associated procedures and infrastructure at RAF Marham will provide a suitable diversion airfield capability for both Protector UK test and evaluation (T&E) activity and later in-service operations.

ACP-2023-047 – Progress Update

Engagement on the TDA highlighted 3 main areas for consideration:

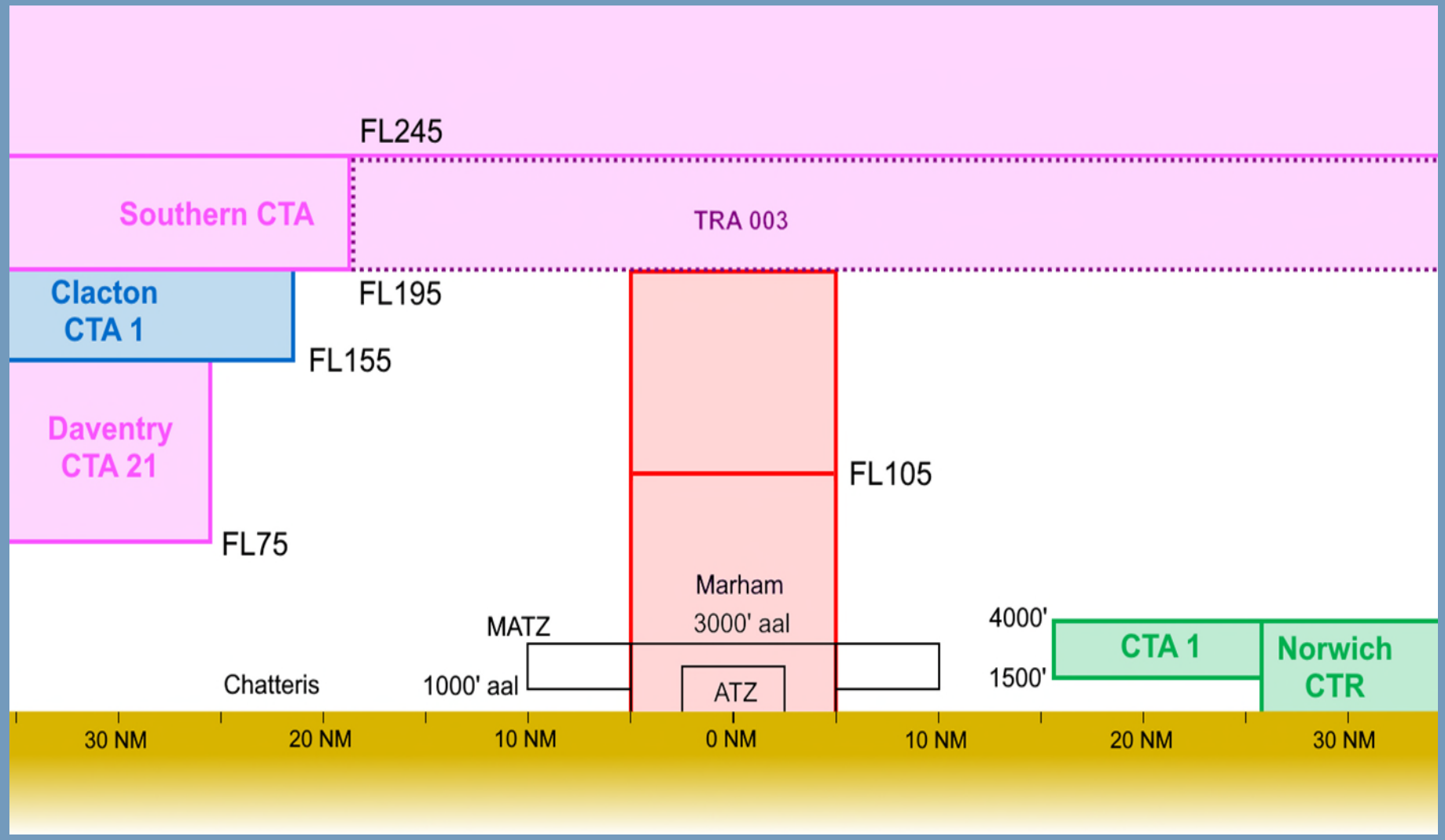
- Amendment to LOAs
- Suggested airspace classification designated Class C. Ruled out in order to;
    - Maintain FUA, particularly during the many hours/days that Protector is not scheduled to fly.
    - Avoid the additional air traffic resource required to manage Class C.
    - Avoid placing restrictions on other airspace users in terms of having to carry radio etc.

- Impact on access to/from airfields located within the TDA.

A vertical internal division has been incorporated following stakeholder feedback

ROYAL AIR FORCE

ROYAL AIR FORCE


FL245
Southern CTA
TRA 003
Clacton
CTA 1
FL195
FL155
Daventry
CTA 21
FL105
FL75
Marham
3000' aal
MATZ
4000'
CTA 1
Norwich
CTR
1500'
Chatteris
1000' aal
ATZ
30 NM
20 NM
10 NM
0 NM
10 NM
20 NM
30 NM

ACP-2023-047 – Planned Ops

- Up to 2 planned diversions to RAF Marham will be conducted in the period 16 May – 31 August 2024.
- Each diversion profile will involve an arrival and departure from RAF Marham.
- Important to note: the TDA will need to be active for all Protector flying, including sorties from RAF Waddington when a planned diversion is not expected (i.e. the TDA may be active but not necessarily used).

ROYAL AIR FORCE

ACP-2023-047 – Airspace Management

- Operating Authority - Marham ATC.
- A DACS will be available during TDA hours of activation from Marham ATC.
- A DAAIS will be available from Marham ATC during TDA hours of activation and ATC opening hours. London Information will also provide a DAAIS on 124.6MHz.
- The MOD will activate the airspace structures only as and when Protector planned to fly (at Waddington).
- Some revised LOAs issued by Marham ATC 8 Jan 2024.

ROYAL AIR FORCE

ACP-2023-047 – Timeline

TDA submitted – 12 Jan 2024

CAA Decide – 9 Feb 2024

Implementation – 18 May to 31 Aug 2024

ACP-2023-022 – Statement of Need

When the large RPAS Protector RG Mk1 comes into service it will require a diversion aerodrome for the eventuality that the RPAS is unable to be recovered to its main operating base at RAF Waddington. Pursuit of an ACP optimises an approach to establish suitable airspace to enable safe and efficient access to a **nominated diversion airfield** in the event that a diversion is required. Given the anticipated performance of on-board systems and the surrounding airspace classification, this approach will support the safe integration of Protector further into the national airspace structures and in accordance with current military flying regulation.

ROYAL AIR FORCE

ACP-2023-022 – Aim

- Establish a permanent DA to facilitate RAF Marham as the enduring nominated diversion airfield.
- The airspace structure is anticipated to be very similar, if not identical, to the TDA proposed in ACP-2023-047.
- The airspace will only be utilised:
  - For actual diversion in the unlikely event that RAF Waddington is unavailable or unsuitable for landing;
  - for practice diversion training – tempo yet to be confirmed, but anticipated to be infrequent.
- If effective, airspace management procedures implemented for the TDA are anticipated to be maintained.

ROYAL AIR FORCE

ACP-2023-022 – Progress Update and Timeline

- Stage 1 - DEFINE — CAA Gateway: 29 Feb 2024

In progress – To agree with stakeholders the Design Principles on which the ACP will be assessed and progressed.
Engagement ends 30 Jan 2024.

- Stage 2 - DEVELOP & ASSESS — CAA Gateway: 26 Apr 2024
- Stage 3 - CONSULT — CAA Gateway: 31 May 2024
- Stage 4 - Formal ACP SUBMISSION — 23 Sep 2024
- Stage 5 - CAA DECIDE — 13 Jan 2025
- Airspace implementation — April 2025

ROYAL AIR FORCE

QUESTIONS?

ROYAL AIR FORCE

16 Jan 24

MINUTES OF THE EAST ANGLIA AIRSPACE USERS WORKING GROUP HELD AT RAF MARHAM ON 16 Jan 2024

Present	[redacted]	OC OSW, RAF Marham	Chair
	[redacted]	617 Sqn XO	
	[redacted]	Ltng SUST ITC Delivery	
	[redacted]	TATCC Cdr	
	[redacted]	CON Stn Safety Cell	
	[redacted]	DRAFLO	
	[redacted]	OC 2623 RAuxAF Sqn	
	[redacted]	WIT AO	
	[redacted]	DAATM	
	[redacted]	LKH F35 IP	
	[redacted]	78 SQN ATCO	
	[redacted]	115 Sqn QFI	
	[redacted]	MLD A/F Ops Flt	
	[redacted]	LKH Air Ops Flt Cdr	
	[redacted]	MRM ATCO	
	[redacted]	WIT Air Ops Sqn	
	[redacted]	MRM Air Ops Sqn	
	[redacted]	MRM Safety Centre	
	[redacted]	RAPCON Chief Controller	
	[redacted]	MLD ATC	
	[redacted]	USAFE LO	
	[redacted]	WAT A/F Manager	
	[redacted]	Global Drone Trg	
	[redacted]	Hexcam/ Global Drone Trg	
	[redacted]	East Anglia Air Ambulance	
	[redacted]	Mcaully Flying Group	
	[redacted]	Norfolk Gliding Club	
	[redacted]	Old Buckenham Airfield	
	[redacted]	Wash and N Norfolk Marine Partnership	
	[redacted]	CAA	
	[redacted]	Duxford FISO	
	[redacted]	East Winch Airfield	
	[redacted]	Boughton South	
	[redacted]	Fenland Airfield	
	[redacted]	UK Airprox Board	
	[redacted]	Cambridge Airport	
	[redacted]	Bristow	
	[redacted]	Bristow	
	[redacted]	UAS CDC	
	[redacted]	UAS CDC	
	[redacted]	RSPB Cons Officer	
	[redacted]	Norwich Airport	
	[redacted]	Norwich Airport	
	[redacted]	Boughton South	
	[redacted]	Bury Model Flying Club	
	[redacted]	Felthorpe Airfield	
	[redacted]	PilotAware	
	[redacted]	Norfolk Police	

	[redacted]		Sec
Apologies	[redacted]	RAFLO RAF Safety Centre TATCC XO SYE A5 Ludham Airfield Osprey	

Item 1 & 2 – Welcome, Opening Remarks | **ACTION**

1. The chair welcomed and thanked all the attendees for making the time to come to the RAUWG and highlighted the importance of these forums to maintain a community of airspace users who work together to increase air safety in the region and reduce the chance of Mid-air collisions (MAC). The chair also mentioned the increased security threat to the UK and its allies due to current events.

Item 3 – Apologies & Minutes from Last Meeting

2. Apologies were received by email prior to the event, and no issues were raised with the previous minutes.

3. No actions were unresolved from the previous meeting.

Item 4 – Specific Items for Discussion

4. **RAF Marham Ops**. [redacted] provided a brief explanation of the ongoing Lightning Force Ops at RAF Marham and how this may impact local airspace users. He explained that the F35 Lightning was maintaining a high ops tempo to maintain readiness for deployment around the world.

5. An explanation of the roles of the 3 Marham based Sqns was given, with 207 Sqn highlighted as the Operational Conversion Unit (OCU), training the next generation of front-line pilots who then move on to 617 Sqn for high readiness operations wherever tasked. 809 NAS was also mentioned to have been stood up initially growing out of 617 Sqn as a secondary front-line Sqn.

6. A brief description was given of Marham's departures and recovery patterns, essentially a runway track departure for instrument departure and a slight jink for noise abatement on VFR departures. It was mentioned that Marham predominantly use runways 23/05RH due to 01/19RH unserviceability. When 01/19RH becomes serviceable, 90% of flying will still be done from 23/05RH.

7. [redacted] explained local area ops, F35 will generally operate northeast of Marham in the block FL50-FL190. They will carry out Tac Admin enroute D323 complex off the North Norfolk coast, usually with high energy manoeuvres leading to a degradation in ability to see and avoid as well as be seen on RADAR.

8. A brief overview was given for the RAF Marham Flying Club and their activity, usually weekend flying but occasional mid-week out of airfield hours too. RAF Marham Flying Club operate on Marham VHF frequencies, always monitoring 124.15.

9. A discussion took place between the representative from Norfolk Gliding Club and the Marham personnel whereby it was mentioned that gliders especially in the good weather summer months, can often congregate within the Marham MATZ and are difficult to see on RADAR and by flying crews. It would be preferable if they were to carry RT equipment and transponders to make it easier to de-conflict with military aircraft.

10. **RAF Lakenheath/ Mildenhall**. [redacted] gave an update to the forum on both RAF Mildenhall and RAF Lakenheath, opening with a broader description of what the US forces do in Europe and Africa as a whole, including their support to

NATO, Russian deterrence and enhancing partner capability in the regions. He then explained more specifically the structure of the US forces hosted in the UK, totalling 22,494 visiting US forces. He spoke about the 4 fighter Sqns based at RAF Lakenheath and how they often undertake 60 departures per day, surging to 100 in busier periods, these sometimes make up a majority of the traffic seen over East Anglia and so are the most pertinent for local airspace users to be aware of.

11. Precautionary Flame Out procedures were explained to the forum by Mr Fuller and Maj Bown who operates F35 at RAF Lakenheath. Following on from this, Mr Fuller spoke about a 'Listening Squawk' and frequency that civilian pilots can monitor when flying in the vicinity of Lakenheath and Mildenhall.

12. Glider activity was mentioned and discussed within the forum. Lakenheath have been working with local clubs to form a more cohesive and safer environment during good soaring days. As touched upon earlier in the forum, glider pilots were encouraged to communicate with local air traffic controllers if they are able to.

13. [redacted] described the role of 352 Special Operations Wing within the UK. Comprised of 7th Spec Ops Sqn and 67th Spec Ops Sqn, they offer the US options to support conventional operation forces in austere conditions and with a low footprint. This is done using cutting edge tilt-rotor aircraft with advanced sensors and precision avionics.

14. **Civil Air Support.** [redacted] gave a comprehensive brief to the forum regarding the multitude of services offered by Civil Air Support (CAS), a UK-registered charity which is made up of about 100 members and around 85 crewed aircraft. He highlighted that CAS is not an emergency service but is able to offer help when requested. Services offered by CAS include aerial photography, surveys, search, transport, and safety cover.

15. **Norfolk Gliding Club.** [redacted] gave a detailed brief on the characteristics of a typical glider. He explained that gliders are rarely fitted with transponders however most use FLARM which transmits a GPS position at low power to warn of nearby FLARMs. Most gliders in the UK are fitted with VHF radios but most glider pilots do not have RT license and so cannot legally call air traffic service units (ATSU). RT qualified pilots will only contact ATSU when essential for ATZ or Class D penetration.

16. [redacted] provided the forum with an overview of UK gliding statistics, namely how there are 7,000 UK pilots who fly annually in 2,000 gliders which equates to 1 – 1.5 million KM flown cross-country each year. UK gliding has 79 gliding sites in the UK which are mostly launched by winch. Mr Roche-Kelly highlighted the importance of deconfliction when over-flying winch sites and gave the example of Wormingford airfield where four F15s overflew at 2,000 ft/400 Kts as gliders winched up to 2,200 ft.

17. The flying characteristics of gliders were explained with thermal graphs and the techniques they use including thermal soaring and wave soaring to achieve lift. Hot spots for thermal activity included Gransden Lodge, Newmarket TP and Tibenham.

18. **Hexcam & Global Drone Training**. [redacted] delivered a brief to the forum on the BVLOS Sandbox Trial Consultation and the progress on

standing up a temporary reserved area to enable BVLOS drone flying in the region. The Norfolk Vanguard and Boreas wind farms are part of a major critical infrastructure project to aid the UK's transition to net-zero whilst meeting future power demands. Mr Cory-Wright then provided an ongoing report on the current situation, Phase 2, whereby BVLOS is used in conjunction with Airspace Observers to aid in deconfliction with crewed aircraft.

19. Phases 3, 4, 5 and 6 were explained to the forum, with phase 6 expected to take place in Q3/Q4 2025. Phase 3 BVLOS will be achieved with the use of ATOM ground stations and PilotAware on the ground, human observers and drone pilot BVLOS. Phase 4 will introduce an active TRA to be activate by NOTAM up to 750ft on Norwich QNH, to operate within the TRA GA pilots must operate electronic conspicuity equipment (EC). Phase 5 will allow all GA traffic to operate within the TRA. Phase 6, the project goal is to allow BVLOS without TRA but instead to operate in integrated airspace which will still be NOTAM'd.

20. The forum took a short break, on the main screen was displayed an Air Safety Matters slide, provided to the EAAUWG by the RAF Safety Centre as they were regrettably unable to attend. This provided insight on safety matters of the moment relating to helicopter traffic in the North Sea offshore safety areas for attendees to read during the comfort break.

21. **UAS ACP.** [redacted] gave a presentation on the upcoming airspace change/ change proposal coming soon to RAF Marham to enable Protector RG Mk1 Remotely Piloted Air System (RPAS) operations in the UK. In order to operate in the UK, Protector must have a diversion airfield, Marham has been selected as an ideal location for this task. In order for Protector to recover and depart Marham it requires protected airspace; this will come in the form of a temporary danger area initially to then become a permanent DA later. The DA will be activated by NOTAM 24 Hours in advance and RAF Marham will retain danger area crossing services (DACS) throughout the active period. The aim of the DACS is to minimise the time GA pilots will be prevented from using the airspace be it for LARS transit or airfield departures and recoveries within the radius.

22. The dimensions of the proposed TDA/DA will be 5 NM diameter and split vertically into two sections. The first from SFC to FL105, the second from FL 105 to FL195. The reason for splitting the airspace vertically is to reduce the impact of the DA on GA traffic should protector be climbing or descending in the danger area. Procedures and contact information for DA penetration will be published on the NOTAM but is likely to be similar to the extant MATZ crossing services provided by Marham ATC.

23. **UK Airprox Board (UKAB)**. [redacted] welcomed all the attendees. Video examples were shown to demonstrate real life airprox scenarios to highlight the importance of situational awareness in the air to prevent them from occurring. Statistics were presented to the forum from 2022 showing trends that most airproxes ae reported by GA traffic at 177. The combined total inclusive of Military, GA and Emergency services traffic came to 195, 77 of which were deemed risk-bearing. [redacted] explained how the UK Airprox Board operates and how they make safety recommendations, rather than attribute blame to Airproxes received. It was explained what an Airprox is, how they are classified and the process the board takes iot make recommendations to make the airspace safe for all users.

24. **CAA.** [redacted] presented on behalf of the CAA with a focus on Airspace Infringements (AI), particularly in the East Anglian region. General stats and data were briefed showing that AI in 2023 was down by 16% year on year. However military specific AI increased by 19% compared to 2022. [redacted] explained root causes and contributory factors, including lapses in pre-flight planning and preparation and lapses in threat and error management in the air. A strategy update was given, explaining ways in which the CAA is working to try and reduce the risk of AI followed by a reminder of the Electronic Conspicuity rebate scheme which ends in March 24.

25. **Round the room updates.** [redacted] from Cambridge airport reported to the forum that they are having to conduct procedural services due to their unserviceable RADAR. There is a live NOTAM, the issue is due to be repaired as soon as possible.

Item 6 – Closing Remarks.

26. The Chair once more thanked also those for attending and encouraged the ongoing engagement and communication that this type of forum is so beneficial for. He noted that a multitude of change is coming to the region, and that one must understand the implications of the changes so it can be overcome by all local airspace users.

Item 7 – Arrangements for Next Meeting.

27. The next meeting of the EAAUWG will be in June 24. Sec

[Original Signed]

[redacted]
Fg Off
ATCO
Eastern TATCC

Archived: 06 December 2023 13:14:19
From: UASCDC-ACP
Sent: 06 December 2023 12:33:00
To: [redacted]
Subject: UC ACP-2023-047 Engagement Mtg
Response requested: No
Sensitivity: Normal
Attachments:
ACP-2023-047-NATS_Engagement_Mtg_V1.1.pptx ;ACP-2023-047_SBP Dispensation Proposal.docx ;

All,

Thank you for your time today. I have attached the PPT presentation and the draft dispensation application for the safety buffer associated with ACP-2023-047 as discussed today. There is still some clarification to be agreed regarding the Loss of Link procedures; this will be covered during a MOD-led workshop with NATS (tbd Jan 25). With that in mind, I will remove the Loss of Link paragraph from the application on submission to the CAA

Whilst you are still awaiting final comment from within NATS following receipt of the engagement material dated 10 Nov 23 for this ACP, we understand that you do not currently foresee any major issues with the airspace as proposed under ACP-2023-047. We also advised that engagement for Stage 1 of the full ACP (2023-022) for permanent airspace would be commenced in early Jan 25.

The timescale required for NATS to complete its procedures development and associated safety assurance activities in order to safely coordinate flight outside of D324A/B and the proposed airspace at Marham is acknowledged. We understand that MOD is required to provide (as an initial cut) provisional routes between D323 and Waddington as well as between Marham and D323/Waddington'.

I hope that summarises this morning's meeting. Please advise of anything I have got wrong or omitted.

[redacted]

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UAS CDC

Ministry of Defence

ACP-2023-047 Engagement Mtg

Agenda

1. Introduction/Apologies for Absence
2. ACP-2023-047 Statement of Need
3. ACP-2023-047 Key Information
4. ACP-2023-047 Proposed Airspace (VFR Chart)
5. ACP-2023-047 Proposed Airspace (Cross-Section)
6. ACP-2023-047 Safety Buffer Policy
7. ACP-2023-047 Agreed Timescales
8. ACP-2023-022 Statement of Need
9. ACP-2023-022 Key Information
10. ACP-2023-022 Timescales
11. Next Steps
12. AOB

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Introduction/Apologies for Absence

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ACP-2023-047 Statement of Need

The RAF will commence flight of Protector in the UK late in 2023, when it will initially be flown under an military permit to fly (MPTF). The airspace integration safety argument (AISA) for in-service flight will not be in place until delivery of the Release to Service (RTS), anticipated late 2024. Delivery of the RTS is dependent on specific evidence which will be gathered through UK test and evaluation scheduled to commence once new permanent segregated airspace is in place as proposed under ACP-2019-18. Access to a nominated diversion airfield is required during this evidence-gathering T&E activity, where flight outside classes A and C airspace will be necessary.

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ACP-2023-047 Key Information

- Requirement is to ensure access to a diversion airfield for the duration of T&E activity;
- Anticipated timeline May (possible delay until Aug) – late 2024;
- Anticipate 2 planned flights into diversion airfield, use thereafter is on an as required basis for real-time diversions only;
- RAF Marham selected as nominated airfield.
- Trial airspace design for ACP-2023-022.

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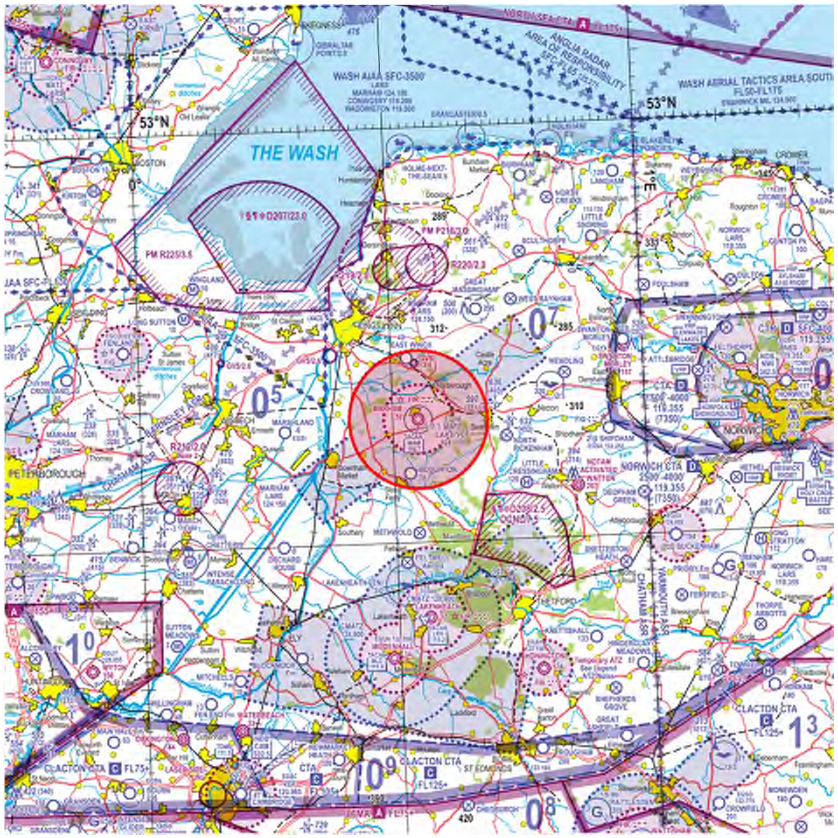
ACP-2023-047 Proposed Airspace



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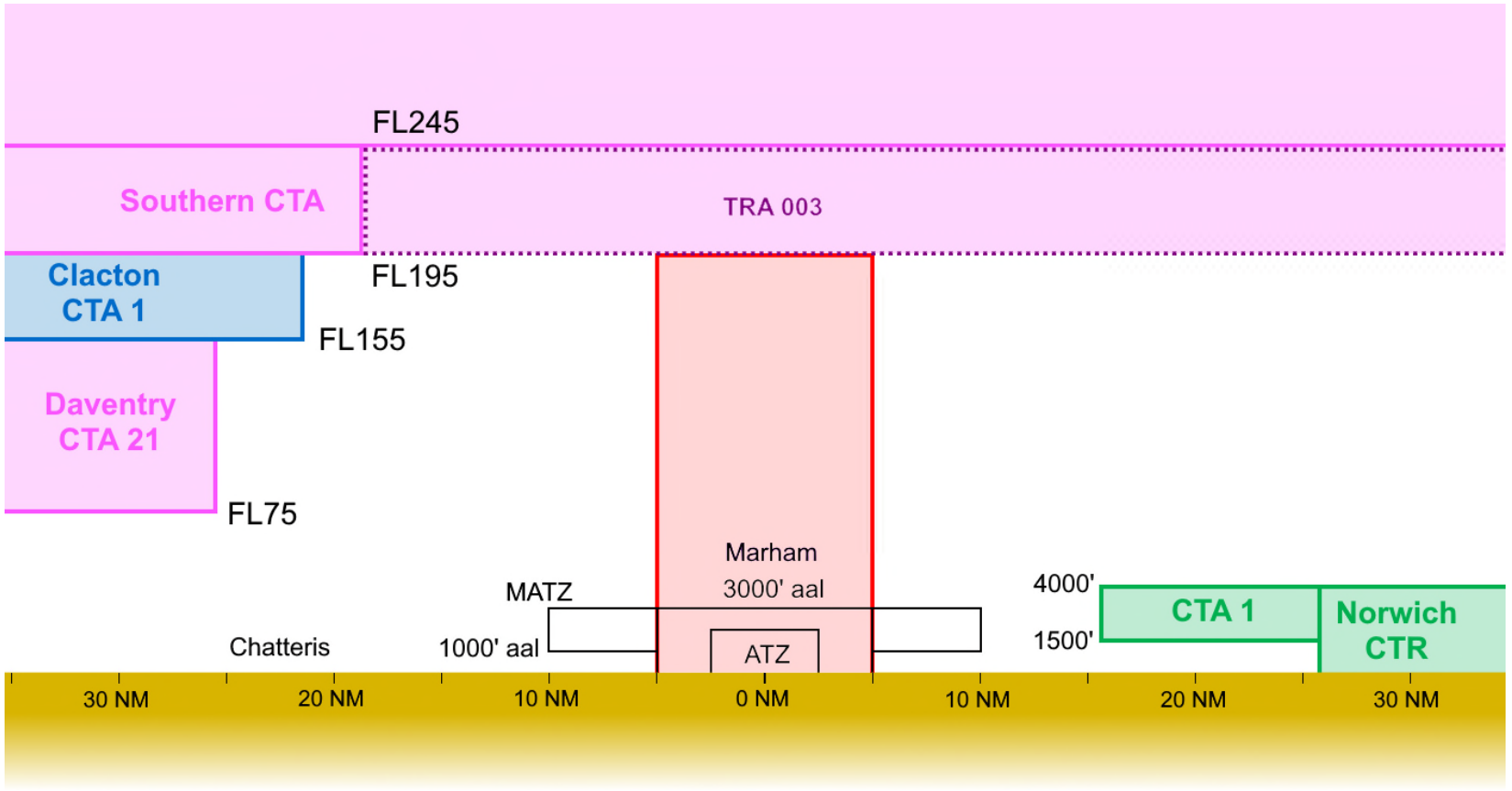
ACP-2023-047 Proposed Airspace (Cross-section)



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ACP-2023-047 Safety Buffer Policy

- Policy Statement dated Aug 2014
- Draft new Policy Statement dated Nov 2023

- No lateral dispensation required since proposed TDA is more than 5nm laterally from CAS
- Vertical dispensation required against CAS FL195+ (and TRA003)

- Work managed under ACP-2019-18; outstanding safety work to be completed by NATS, but thought to support this ACP (and ACP-2023-022)

- Thoughts?

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ACP-2023-047 Agreed timescales under CAP 1616

- Submission - 12 Jan 2024
- DECIDE - **9 Feb 2024**
- AIP Submitted - 16 Feb 2024
- AIP Publication date - 4 Apr 2024
- AIP Effective Date - **16 May 2024**

ACP-2023-022 Statement of Need

When the large Remotely Piloted Air System (RPAS) Protector RG Mk1 comes into service it will require a diversion aerodrome for the eventuality that the RPAS is unable to be recovered to its main operating base at RAF Waddington. Pursuit of an ACP optimises an approach to establish suitable airspace to enable safe and efficient access to a nominated diversion airfield in the event that a diversion is required. Given the anticipated performance of on-board systems and the surrounding airspace classification, this approach will support the safe integration of Protector further into the national airspace structures and in accordance with current military flying regulation.

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ACP-2023-022 Key Information

- Intention is only for use as a real time operational diversion requirement (and to maintain currency);
- Aspirational timeline: airspace implementation ISD (Spring 2025);
- Trials airspace under ACP-2023-047 to be used in support of this ACP**;**
- Requested use of same naming convention for ACP-2023-047 to reduce workload for system changes at Swanwick (not a major AIRAC?).

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ACP-2023-022 Agreed timescales

Stage 1 Define Gateway - 29 Feb 2024
Stage 2 Develop and Assess Gateway - 26 Apr 2024
Stage 3 Consult Gateway - 17 May 2024
Stage 4 Update and Submit - 23 Sep 2024
Stage 5 Decide - **13 Jan 2025**
AIP Submitted - 17 Jan 2025
AIP Publication date - 6 Mar 2025
AIP Effective Date - **17 Apr 2025**

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AOB

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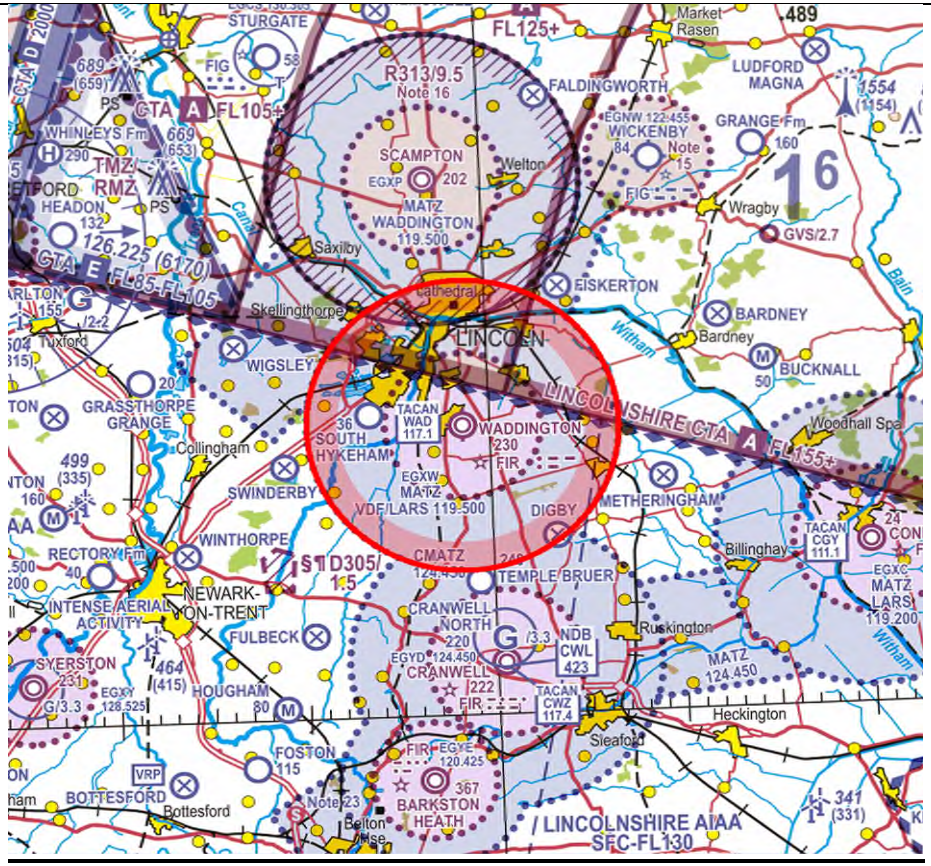
Appendix D - ACP-2023-022 – Design Options Considered for ACP-2019-18 at RAF Waddington

1. In 2022 the MOD presented six low level airspace design options for the airspace in the vicinity of RAF Waddington as part of ACP-2019-18[33]. In a similar process to that followed for the Marham ACP, feedback from stakeholders was sought and a design principle evaluation was completed. The airspace designs were as follows, numbered Options 1 – 6 LOW:

[33] ACP-2019-18 can be found on the CAA ACP Portal here



Option 1 LOW

Activation:
Option 1 would be used for both RAFAT and Protector, but only if the MOD is able to develop procedures for Protector which would not unacceptably impact safety or operational capability for Protector in the UK[34].

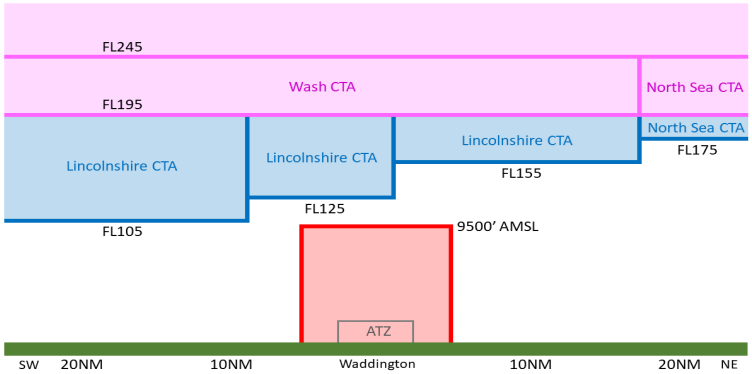


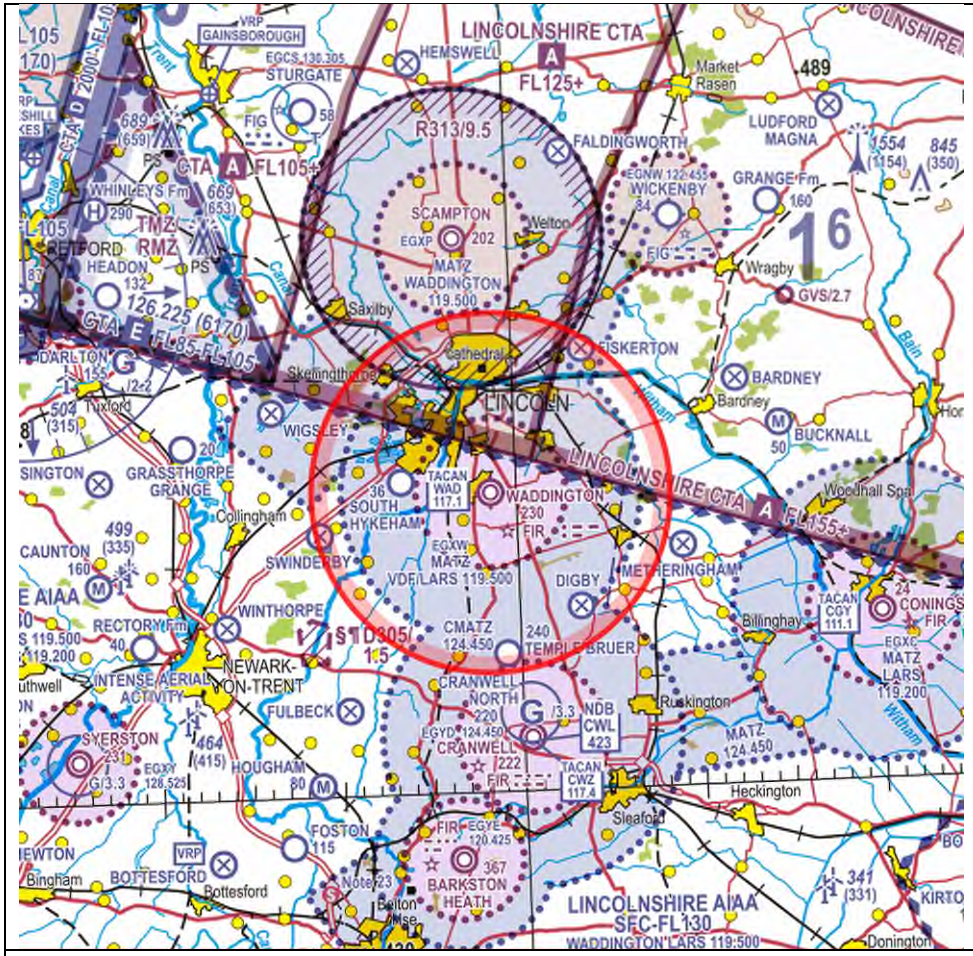
Figure 1- Cross-section SW/NE through extended centreline for RW02/20

Lateral Dimension: 5 nm radius circle centred on RAF Waddington's ARP[35].

Vertical Dimension: Surface to 9500 ft AMSL.

[34] In Mar 22, following continued collaboration with GA-ASI, the manufacturer of Protector, the MOD was advised that the Protector activity could be contained within the airspace depicted in Option 1 LOW.

[35] RAF Waddington's airfield reference point is the midpoint of RW02/20 (530958N 0003126W)



Lateral Dimension: 6 nm radius circle centred on RAF Waddington's ARP.

Option 2 LOW

Activation:
Option 2 would be used for both RAFAT and Protector activities.

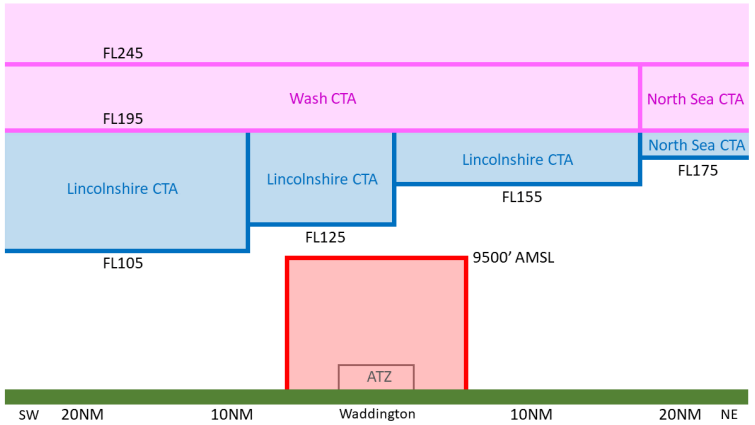
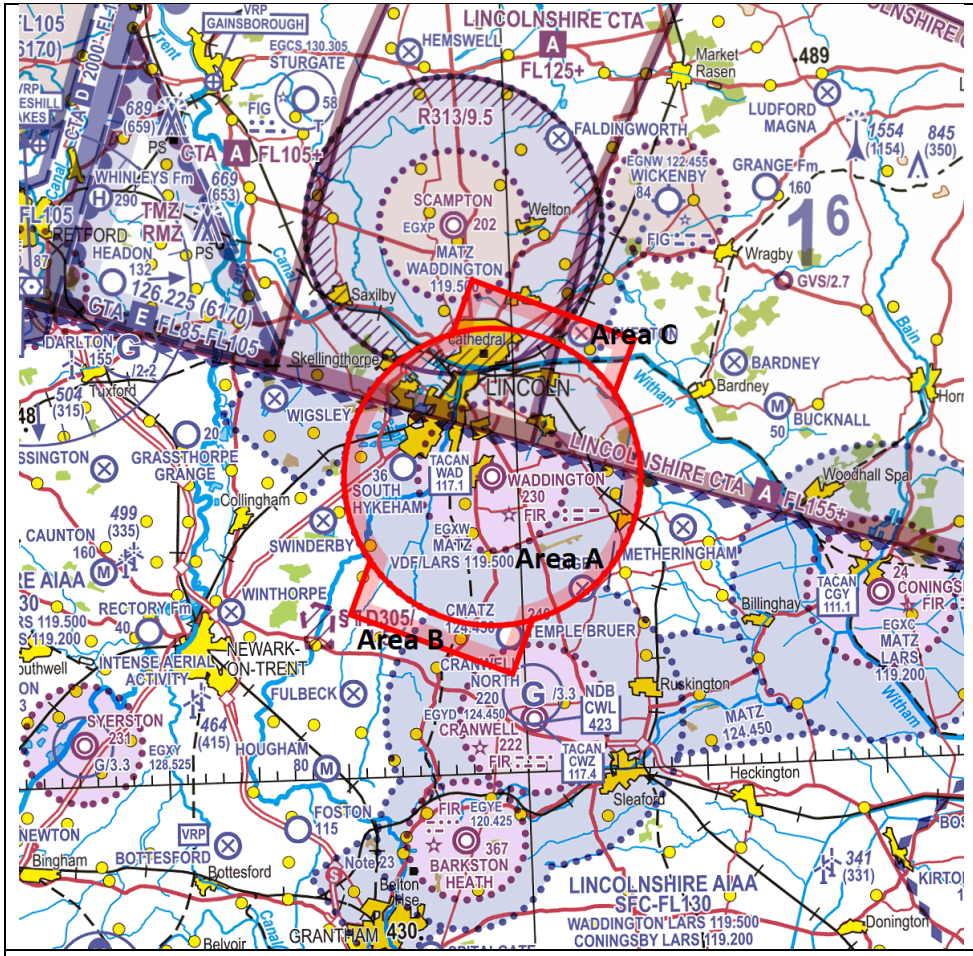


Figure 2 - Cross-section SW/NE through extended centreline for RW02/20

Vertical Dimension: Surface to 9500 ft AMSL.



Option 3 LOW

Activation:
Area A would be activated for RAFAT activity.
Areas A, B & C would be activated for Protector activity.
Areas A, B & C would be activated simultaneously when both activities are planned.

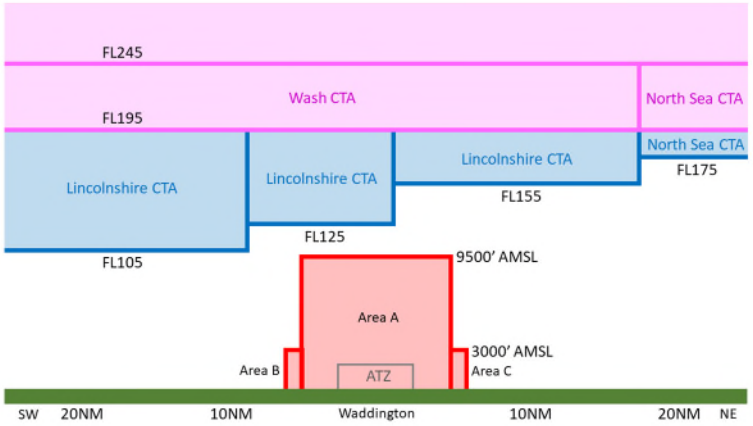
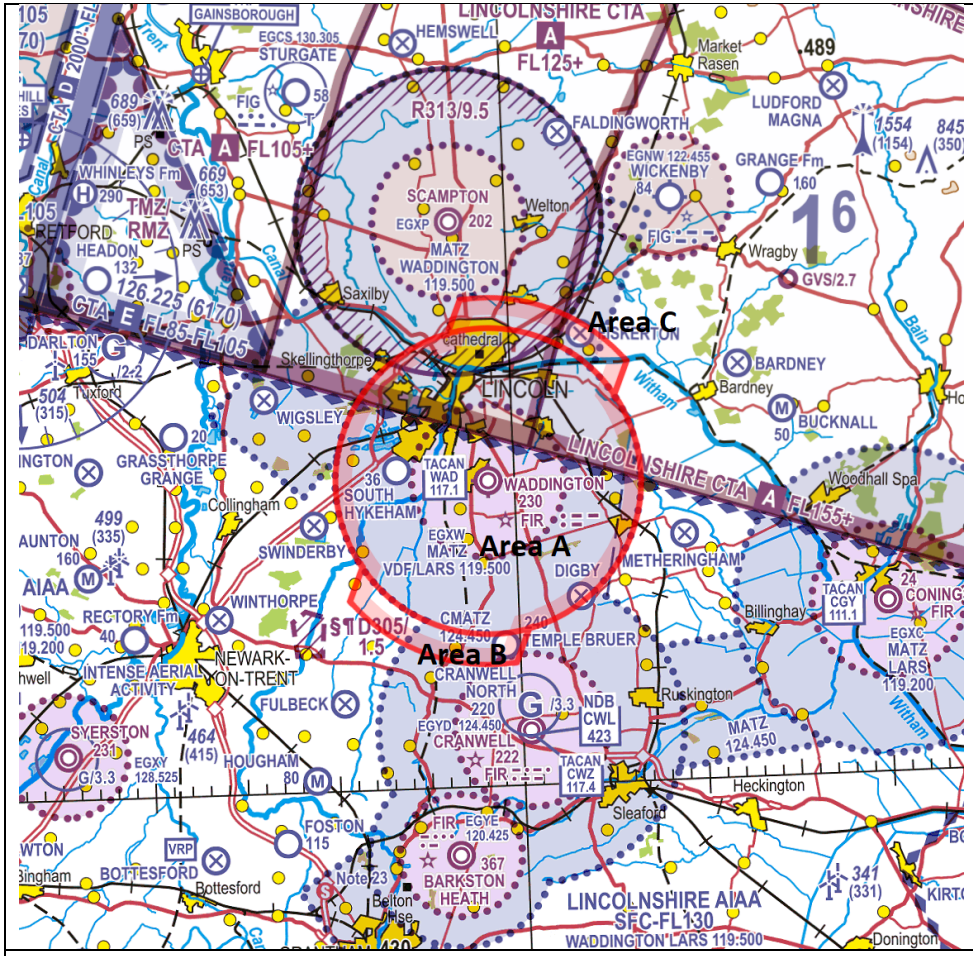


Figure 3 - Cross-section SW/NE through extended centreline for RW02/20

Lateral Dimension:
Area A - 5 nm radius circle centred on RAF Waddington's ARP:
Areas B & C - stubs aligned with the runway centreline, extending from boundary of Area A to 6 nm from ARP into RW02/20 approach/departure lanes and 3 nm either side of RW02/20 extended centreline. The ends of the stubs are perpendicular to the runway extended centrelines.

Vertical Dimension:
Area A - Surface to 9500 ft AMSL;
Areas B & C - Surface to maximum 3000 ft AMSL.



Option 4 LOW

Activation:
Area A would be activated for RAFAT activity.
Areas A, B & C would be activated for Protector activity.
Areas A, B & C would be activated simultaneously when both activities are planned.

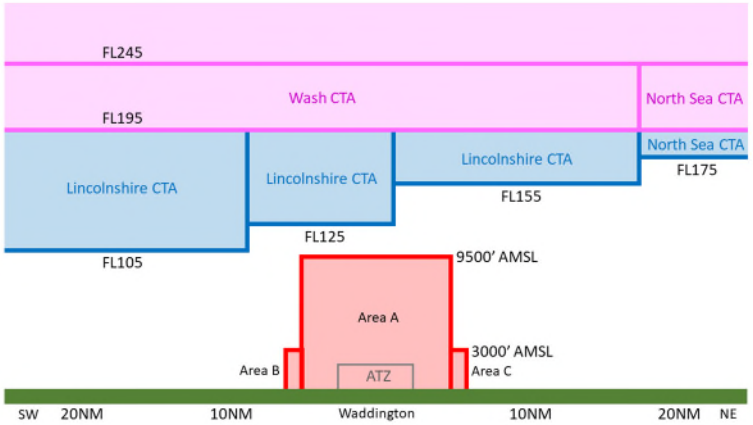
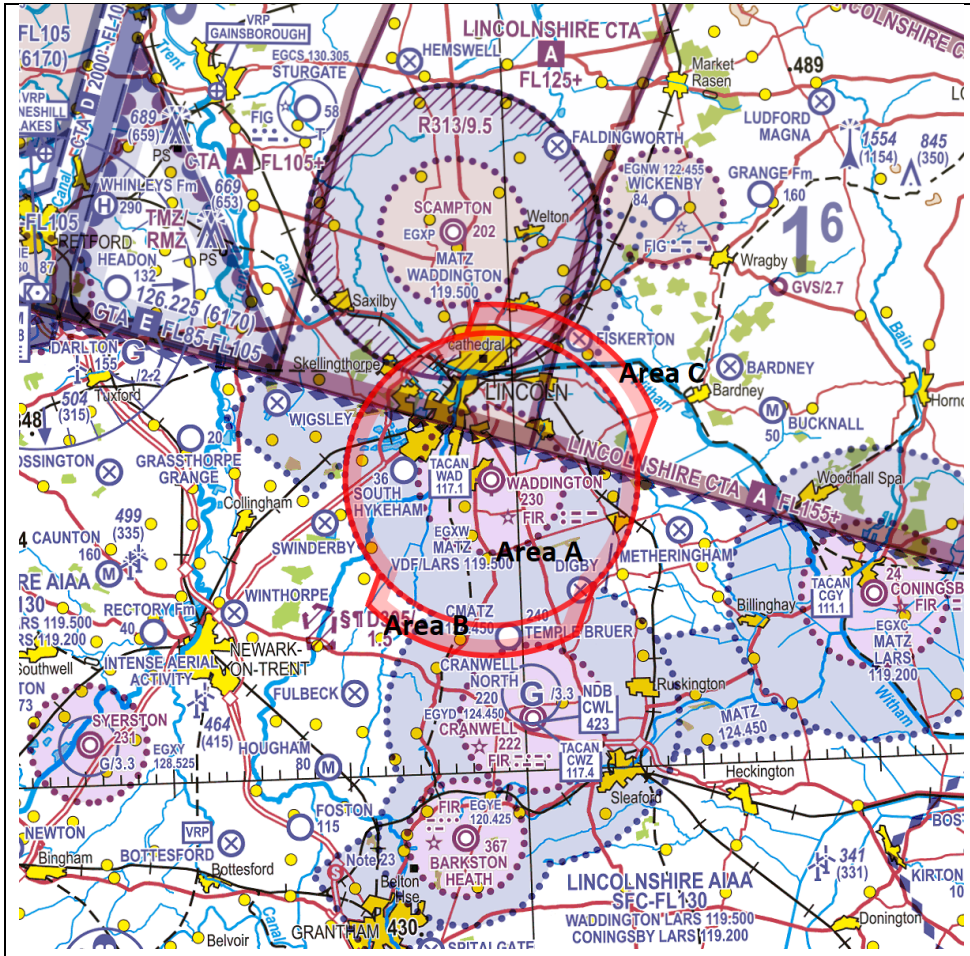


Figure 4 - Cross-section of SW/NE through extended centreline for RW02/20

Lateral Dimension:
Area A - 5 nm radius circle centred on RAF Waddington's ARP;
Areas B & C - stubs aligned with the runway centreline, extending from boundary of Area A to 6 nm from ARP into RW02/20 approach/departure lanes and 3 nm either side of RW02/20 extended centreline. The ends of the stubs follow a 6 nm arc measured from the ARP.

Vertical Dimension:
Area A - Surface to 9500 ft AMSL;
Areas B & C - Surface to maximum 3000 ft AMSL.



Option 5 LOW

Activation:
Area A would be activated for RAFAT activity.
Areas A, B & C would be activated for Protector activity.
Areas A, B & C would be activated simultaneously when both activities are planned.

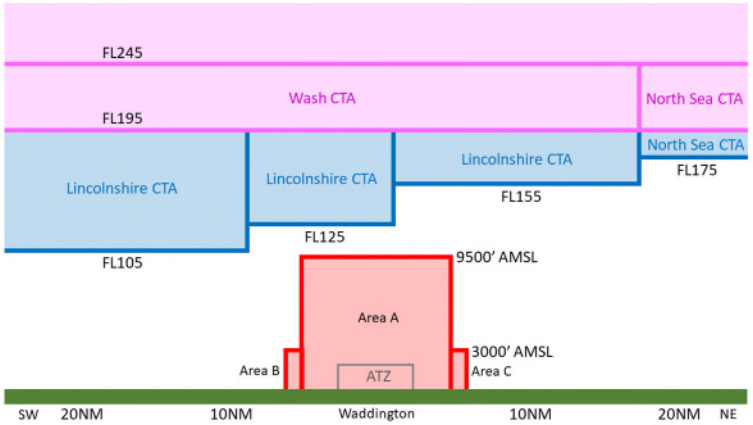
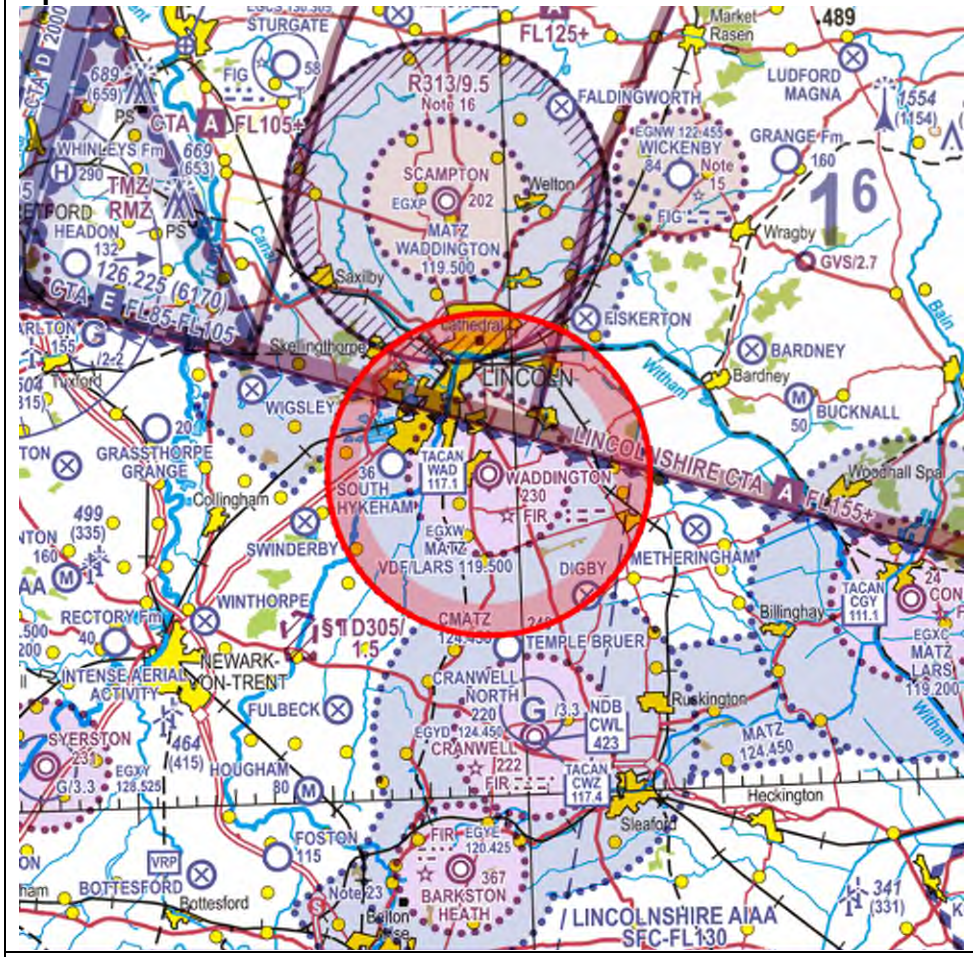


Figure 5 - Cross-section SW/NE through extended centreline for RW02/20

Lateral Dimension:
Area A - 5 nm radius circle centred on RAF Waddington's ARP;
Areas B & C – areas extending from the boundary of Area A to follow a 6 nm arc measured from the ARP, starting 2.5 nm west of the RW02/20 extended centreline and finishing 4.5 nm east of the RW02/20 extended centreline.

Vertical Dimension:
Area A - Surface to 9500 ft AMSL;
Areas B & C - Surface to maximum 3000 ft AMSL.

Option 6a



Lateral Dimensions:
Option 6a LOW - 5 nm radius circle

Option 6 LOW

Activation:
Option 6a would be activated for RAFAT-only activity
Option 6b (areas A, B & C) would be activated for Protector-only activity
Options 6a & 6b (areas A, B & C) would be activated simultaneously when both activities are planned.

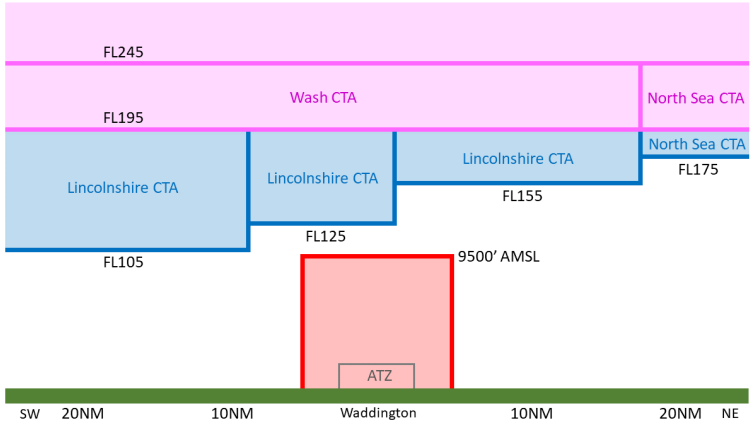


Figure 6 - Cross-section SW/NE through extended centreline for RW02/20

Vertical Dimensions:
Option 6a LOW - Surface to 9500 ft AMSL

Option 6b LOW

Option 6 LOW (continued)

Activation:
Option 6a would be activated for RAFAT-only activity
Option 6b (areas A, B & C) would be activated for Protector-only activity
Options 6a & 6b (areas A, B & C) would be activated simultaneously when both activities are planned.

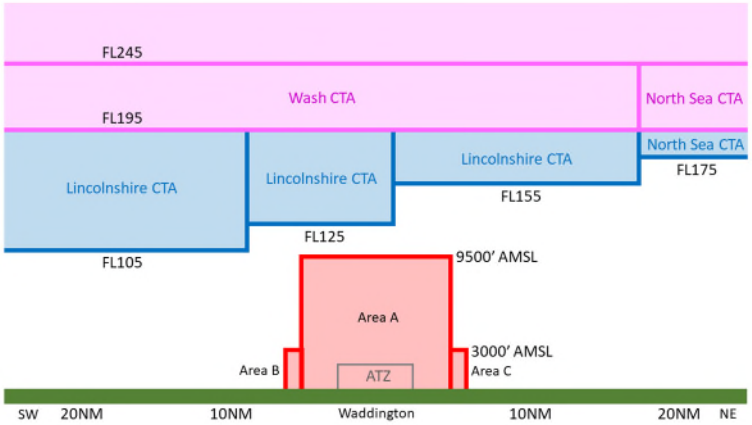


Figure 7 - Cross-section SW/NE through extended centreline for RW02/20

Lateral Dimensions:	**Vertical Dimensions:**
Area A is made up of a 5 nm radius circle with segments removed to the west and east of the circle. The western edge runs along a line 2.5 nm west of and parallel to the RW02/20 centreline. The eastern edge runs along a line running 4.5 nm east of and parallel to the RW02/20 centreline. Areas B & C – areas extending from the 5 nm arc of Area A to follow a 6 nm arc measured from the ARP, starting 2.5 nm west of the RW02/20 extended centreline and finishing 4.5 nm east of the RW02/20 extended centreline.	Area A – Surface – 9500 ft AMSL Areas B & C – Surface to maximum 3000 ft AMSL

2. Details of the design principle evaluation itself can be found on the CAA ACP Portal.[36] On completion of the evaluation, Option 1 LOW was confirmed as a viable airspace design option for Protector activity. As it was the smallest of all volumes of airspace within the low level airspace design options, it is the only one that the MOD took through to the further stages of the ACP.

3. Options 2 – 6 LOW were discounted as they did not meet the specific design principle (DP) "*Minimise the impact to other airspace users* "; only Option 1 LOW met the DP as it was the smallest volume of airspace and also reduced the impact on operations at two local airfields adjacent to RAF Waddington.

4. Options 3, 4, and 5 LOW added a small degree of complexity compared with Option 1 LOW. Option 6 LOW added even more complexity compared with Options 3, 4 and 5 LOW.

5. Option 2 LOW, whilst it is simple in design, has the largest volume of airspace.

6. For those reasons above, Options 2 – 6 LOW were discounted.

[36] ACP-2019-18_Stage_2A_Submission_V2.0