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Ministry
of Defence

ACP-2019-18

**GATEWAY DOCUMENTATION:
STAGE 1 DEFINE**

**STEP 1B DESIGN PRINCIPLES
AND
STAKEHOLDER ENGAGEMENT**

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Roles

Action	Role	Date
Produce	Airspace Change Team UAS CDC	10 Dec 19
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Introduction

The Ministry of Defence, and specifically Air Capability, is the change sponsor for this proposal. The proposal seeks to secure airspace for the integration of Protector RG Mk1 into UK airspace in the early 2020s.

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 1 Define Gateway, Step 1B - Design Principles.

As described in Annex D to CAP 1616, the Change Sponsor has engaged with a range of potential stakeholders to seek their views on the change proposal and collect feedback as to what is important to them regarding the proposal in terms of Design Principles.

It is important to assure stakeholders that they are included in the change process and that they have influenced the design. The stakeholder feedback has been analysed and summarised in this document to describe how the feedback has been incorporated into finalised Design Principles. The finalised Design Principles will be employed in the development of airspace design options.

Executive Summary

The Change Sponsor conducted detailed stakeholder analysis to ensure they effectively engaged with all potential stakeholders over the Design Principles.

Stakeholders were engaged in writing and included:

- County and District councils

- Selected national and local organisations

- Local General Aviation (including aerodrome operators)

- Commercial aerodrome operators

- National Air Traffic Management Advisory Committee members

The change sponsor attended a local airspace users forum prior to the formal Design Principle engagement and again after the engagement material had been sent out, enabling socialisation of the procurement of Protector, its basing at RAF Waddington and the potential for airspace change.

The major theme in the feedback received was concern that the change proposal would restrict freedom of manoeuvre for general aviation. An additional concern was that any change should not impact the national air traffic services route structure.

Full details of engagement can be found later in this document.

As a result of the engagement, some of the Design Principles have been adjusted and one has been deleted. All changes have been commented on and all queries that have not resulted in a Design Principle change have been discussed below.

How this document is laid out

Section 1

We engaged a representative group of aviation and local community stakeholders.

This section summarises:

How we identified stakeholders;

How we engaged with stakeholders;

The engagement chronology.

Section 2

We developed the design principles based on stakeholder feedback.

This section describes:

The initial set of design principles offered by the sponsor;

A summary of the feedback and how the design principles were adapted;

How the design principles were prioritised.

Section 3

Next steps in the airspace change proposal

Section 1

How we identified Stakeholders.

Detailed stakeholder analysis was undertaken.

Initial airspace options development will be focussed on the area surrounding RAF Waddington which will be the Main Operating Base for Protector.

To determine stakeholders, the potential area that could be affected by an airspace change was identified. At this early stage the MOD is hoping to restrict any potential airspace changes to airspace within the vicinity of Protector's operating base. For this reason, the MOD has selected its stakeholders from an area within a radius approximately 30 miles of RAF Waddington.

Research was undertaken in the defined areas to identify local authorities, General Aviation aerodromes, General Aviation operators, commercial airports and businesses potentially affected.

The assumption was made that NATMAC and local authorities, as over-arching bodies, would pass the information down through their communication chains, to inform their representatives to an appropriate level.

Local authority engagement was conducted at county and district level but did not include parishes. District council level was thought to be important as this is the level at which planning committees sit. Parish councils were not included because there would have been a very large number of parish councils and it was considered that feedback at this level would be more appropriately targeted once the design options were known. By exception Waddington Parish Council was sent an engagement letter, purely because it is so adjacent to the Main Operating Base.

Notwithstanding the expectation that NATMAC members would cascade engagement literature to an appropriate level, it was important to attempt to identify General Aviation organisations local to, and just beyond, the specified area. Best efforts were made to reach out directly at this level.

The following stakeholders were identified either by scrutiny of aeronautical charts or through communication with the Secretary of the Lincolnshire Airspace Users Group (LAUG) who provided a list of the group's civilian members¹. An additional 2 stakeholders were engaged after their details had been provided by one member of the LAUG:

¹ The Secretary of the LAUG obtained permission from all civilian members for their email address to be shared with the ACP Manager.

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Aviation Stakeholders		
All NATMAC Members	Anwick Airfield	Boston Aero Club
Pointon Airfield	Bristow Helicopters, Humberside	Buckminster Airfield
Castle Bytham Airfield	Conington Airfield	Darlington Airfield
Decoy Farm	Doncaster Sheffield Airport	East Midlands Airport
Frank Morgan Flying School	Headon Microlight	Hibaldstow Airfield
Hougham Airfield	Hucknall Airfield	Humberside Airport
Lambley airstrip	Langar Airfield	Leicester Aero Club
Leicester Airport	Lincolnshire Gliding Club	Local Microlight Pilot 1 @ Long Sutton Airstrip
Netherthorpe Airfield	New York airstrip	North Coates Airfield
Nottingham Aeros	Peterborough and Spalding	Rectory Farm
Retford Airport	Saltby and Buckminster	Skegness Airfield
Strubby Airfield	Sturgate Airfield	Sywell Airfield
Temple Brewer Airfield	Trent Valley Gliding Club	Wickenby Airfield
Wilsford airstrip		

Local Authority Stakeholders		
Lincolnshire Wolds Area of Outstanding Natural Beauty	Natural England	Environment Agency
County Land and Business Association	Campaign to Protect Rural England (CPRE)	Lincolnshire County Council
North Kesteven District Council	City of Lincoln Council	South Kesteven District Council
South Holland District Council	Boston Borough Council	East Lindsey District Council
West Lindsey District Council	Nottinghamshire County Council	Rushcliffe District Council
Newark and Sherwood District Council	Bassetlaw District Council	Gedling District Council
Mansfield District Council	North Lincolnshire Council	North East Lincolnshire County Council
Leicestershire County Council	Melton District Council	Rutland County Council
Doncaster Metropolitan Borough Council	Sheffield City Council	Derbyshire County Council
Bolsover District Council	Lincolnshire Resilience Forum	Waddington Parish Council

Engagement methods.

A varied and proactive approach was used to engage with potential stakeholders. To ensure wide awareness of the proposed ACP we engaged through written communication to organisations we believed would be interested. At this stage of the engagement, we felt that there would be little value in holding drop-in sessions as there was very little information to share about any potential airspace changes. It was felt that this would be better organised for early in Stage 2 of the ACP.

- a. **Attendance at and Presentation to the LAUG.** The ACP Sponsor and a member of the RAF attended the LAUG at RAF Cranwell in Jul 19 and gave a presentation containing information about the arrival of Protector at RAF Waddington in the early 2020s. In addition a comprehensive brief on the airspace change process

was given, including the means by which local airspace users would be able to assist with and/or influence any potential airspace design. A return visit was made to the Dec 19 LAUG where a short update was given. Face-to-face engagement with interested stakeholders was managed at both meetings.

b. **Written communication.** An initial email introducing the ACP was sent, along with a letter with details of our draft design principles and an explanation about how we would like to engage with stakeholders for feedback on our proposal. The letter included details on how to leave feedback via the CAA portal, our direct email address for any questions or feedback. Details are available on the portal.

Surveys. The use of a survey was considered as an engagement method. However, review of other surveys identified that they are more suited to discovering stakeholders' views for environmental impact; the provisional M1 categorisation requires a different obligation for the MoD. Surveys are efficient in seeking views when in possession of a well-defined list of stakeholders. In this instance it was felt that the option of electronic communication would deliver more robust and effective engagement.

Members of Parliament. It was decided not to engage directly with MPs at this stage. With an up-coming general election in the offing, the MOD felt that it would be more advantageous to commence engagement in early 2020 via the Air Secretariat.

Engagement chronology. The table below details the design principles engagement activity undertaken.

Date	Action / Stakeholders Contacted	Notes
May 19	Protector ACP email address published on CAA ACP portal.	
17 Jul 19	All attendees at the Lincolnshire Airspace Users Group at RAF Cranwell (mix of 50 military and civilian airspace users)	PPT presentation on the Protector capability and the airspace change process
23 Sep 19	All NATMAC members.	Letter Draft design principles
23 Sep 19	Local authority and organisations stakeholders	Letter Draft design principles
23 Sep 19	Local aviation stakeholders.	Letter Draft design principles
17 Jul – 22 Sep 1929 Oct 19	Responding to general public individual enquiries, email and telephone calls.	Contact made by 21 organisations or individuals regarding potential airspace change, 4 of which declared no comment at this stage
10 Dec 19	All attendees at the Lincolnshire Airspace Users Group at RAF Cranwell (mix of 50 military and civilian airspace users). Verbal engagement with several who had responded during Stage 1b.	Verbal update to attendees and available for questions at the end of meeting

Section 2

Draft Design Principles.

To provide a start point and initiate a discussion on design principles, a list of draft design principles was offered during engagement.

The concept of a 'long list' was rejected; a review of this approach found that these majored on Environmental Impact principles for commercial traffic. Given the provisional M1² categorisation of this proposal it was assessed that environmental impacts could be accounted for under a single design principle to minimise the impact on other aircraft, which we felt would be appropriate to this stage in the process and could be developed in detail at later stages.

The draft design principles initially offered are in the table below:

Draft Design principle. The design must:		Initial Rationale
a	Provide a safe environment for airspace users	As RAF Waddington is currently located in Class G airspace, and the rules of air do not allow RPAS BVLOS operations in Class G to support the safe operation of Protector, it is, therefore, believed that Airspace is required to ensure the safe operation of a large RPAS operating BVLOS.
b	Provide access to sufficient area for both training and operational objectives	The area required must be sufficiently large to allow Protector to manoeuvre at its Main Operating Base, reach airspace for its en route transit and/or to conduct its training sorties and operational objectives. It is an MOD imperative that the airspace shape and size is viable for the flying operation.
c	Be in accordance with current airspace regulation	The MOD wishes to make it clear that it has no intention of introducing new airspace regulation for the integration of Protector into UK airspace.
d	Where possible and practicable, accommodate the emerging Airspace Modernisation Strategy	It is important to the MOD to embrace the new and emerging strategy since it may lead to a means to reduce impact on other airspace users and to minimise the need to implement further changes as the strategy matures.
e	Minimise the impact to other airspace users, both in activation and volume of airspace required	From previous experience in the introduction of airspace and procedures for RPAS activity in the UK, it is clear that the impact on other airspace users can be reduced by a variety of means, which the MOD intends to explore. This also fits with the requirement of CAP 1616.
f	Endeavour to make the airspace as accessible as possible	As in Design Principle (DP)(e) previous experience in the implementation of airspace for RPAS activity has illustrated that enabling access to such airspace for other airspace users is an important part of any airspace design. The MOD intends to fully explore this.
g	Use Flexible Use of Airspace (FUA) principles to manage the airspace as far as is practicable (Efficiency and Airspace Sharing)	UK airspace is congested and has many users. It is important to make airspace available to the greatest extent possible and minimise restrictions.
h	Use standard airspace structure where possible (Conformity, Simplicity and Safety)	Airspace structures and associated usage rules vary and can be difficult to understand. Standard and simple airspace structures are preferred.

² For a Level M1 change, a military proposal anticipated to affect civil operations must take the environmental impact of those effects into account. Therefore, in this scenario, the Ministry of Defence must discuss options with local communities.

Design Principles Evolution

Relevant comments from all stakeholders were collated and arranged under the related draft design principle. Where it was assessed that a new design principle had been proposed, these were listed separately. All comments were reviewed and responded to. Where a change to the draft design principle was accepted, this was annotated and a revised design principle was proposed.

DP(a). Provide a safe environment for airspace users.

There was support for this DP from several members of the NATMAC and local airspace users. One professional association was keen to ensure that an adequate safety case would be presented for any changes to airspace; this is in keeping with the CAP 1616 process to which the MOD will adhere.

One professional stakeholder suggested that the word "all" be inserted before "airspace users". Our response is that it is the MOD's intent to provide a safe environment for those airspace users abiding by airspace regulation and the processes and procedures put in place by the airspace design and safety assessment work. The MOD cannot be held to account for any disregard for the above and would, therefore prefer to omit "all" from the DP.

There were several comments from General Aviation (GA) which indicated they had flight safety concerns, with particular reference to the equipment fit of Protector. Whilst this was outside the scope of Stage 1b, the MOD was able to provide information on this. The MOD also supports interoperable electronic conspicuity.

Where written opinion was provided, support was given for this DP to remain Priority 1.

No revision proposed. Design principle remains Priority 1.

DP(b). Provide access to sufficient area for both training and operational objectives

Whilst supportive of this DP, there were 2 comments from GA stressing that any airspace implementation was to be kept to the minimum size and duration to achieve the MOD's objectives. These concerns are noted and will be explored in the airspace design phase. However, no revision of the DP is suggested, since the MOD will have to justify any additional airspace restrictions (in terms of volume and duration) during the CAP 1616 process.

Support for this DP to remain Priority 2 was provided.

No revision proposed. Design principle remains Priority 2.

DP(c). Be in accordance with current airspace regulation

There was very little feedback on this DP. However, one professional stakeholder suggested its removal since it would not be possible to progress any airspace design outside current regulation. The MOD agrees with this.

Design principle removed.

DP(d). Where possible and practicable, accommodate the emerging Airspace Modernisation Strategy

Support for DP(d) was evident, with specific feedback on the use of electronic conspicuity, mandatory transponder zones, efficient transition between upper and lower airspace levels,

minimum airspace volumes and flight profiles. There was support for this DP to sit at Priority 3.

No revision proposed. Design principle awarded Joint Priority 3 (see DP(e) below).

DP(e). Minimise the impact to other airspace users, both in activation and volume of airspace required

This DP received the most comment and requests for appropriate weighting to be given to it in the airspace design phase. In order to minimise the impact on other airspace users, GA stakeholders largely championed the idea of keeping the size and duration of any restrictions to the minimum necessary. There was also some indication that the provision of air traffic services in the vicinity of RAF Waddington during any flying restrictions would be of importance in reducing the impact on other airspace users. One NATMAC member suggested that the words “both in activation and volume of airspace required” was not needed. The MOD agrees with this in that, whilst GA commented about the importance of minimising volume and duration of activation, they are not the only way to minimise impact (e.g. availability of air traffic control services as discussed above). The MOD has decided to delete the additional wording and undertake to investigate the fullest means by which to minimise the impact on other airspace users.

There was also concern that any temporary change to airspace might lead to a permanent restriction being put in place. This will not be the case. The MOD is working towards on-board technical solutions to enable Protector to be operated within all classes of airspace without additional restrictions being put in place. However, it is possible that this will not be achievable during the initial years of Protector’s operation and through the CAP 1616 process the MOD will be looking at ways in which to limit any potential change with the CAA in terms of either time or capability.

Several stakeholders felt this DP should be elevated in priority. It is raised to Joint Priority 3.

Revised DP(e): Minimise the impact to other airspace users

Design principle awarded Joint Priority 3.

DP(f). Endeavour to make the airspace as accessible as possible

Whilst one NATMAC member felt that this design principle was not required since it was simply a means of achieving DP(e), there was strong support given to it from the GA stakeholders. For this reason it will remain. Access to airspace was felt to be important to both sporting and recreational aviation communities and specific reference was made to the provision of appropriate air traffic services in order to maximise access to any implemented airspace.

There was support for this DP to sit at Priority 4.

No revision proposed. Design principle awarded Joint Priority 4 (see DP(g) below).

DP(g). Use Flexible Use of Airspace (FUA) principles to manage the airspace as far as is practicable (Efficiency and Airspace Sharing)

As in DP(f) one NATMAC member felt that this DP was not required since it was simply a means of achieving DP(e). Whilst the MOD agrees with the logic, specific support was received for the flexible use of airspace principles from GA stakeholders and therefore it will remain. Several comments were received advocating the usage of the NOTAM system, which this DP supports.

DPs (f) and (g) were often cited together as being of equal importance to GA, so they are ranked jointly as Priority 4.

No revision proposed. Design principle awarded Joint Priority 4.

DP(h). Use standard airspace structure where possible (Conformity, Simplicity and Safety)

Only 2 comments were received for this DP. One was in favour, whilst the other queried the meaning of the DP. To clarify, the MOD does not intend to invent a new type of airspace structure. Rather, its intent is to assure stakeholders that the design would take on familiar attributes, which would be easily recognised and would be presented in a straightforward manner on aeronautical charts. This DP will remain on the list, but as the lowest priority.

No revision proposed. Design principle awarded Priority 5.

Additional Design Principles Proposed

There were 2 additional DPs proposed which are:

Proposed additional DP	Our Response
One design principle that is missing, as this ACP is for an UAV, is how your vehicle will do 'detect and avoid' should it leave controlled / protected airspace.	This suggestion is related to the aircraft's performance capability and is, therefore, not felt to constitute an airspace design principle. However, since the concern appears to be how Protector will avoid other airspace users and/or remain in any designated airspace, it is related to DPs (a) and (b). A Safety Assessment will be required as part of ACP to demonstrate the airspace element of this.
A new item should be joint Priority 2 "Minimise impacts on the existing ATS route structure"	It is felt that DDP (e) supports this already. In addition, the GA community has stressed the weighting it feels should be afforded to DP (e). Therefore, it is considered unnecessary to introduce a design principle solely to cover the ATS route structure. The MOD will engage strongly with NATS and the GA community to keep the impact on both bodies to a minimum.

We did not find that any new DPs, or amendments to existing DPs were required from the above.

Design Principles Prioritisation Summary

Safety is the highest priority and so DP(a) is automatically assigned Priority 1.

The MOD feels that the ability to complete its training and operational objectives is next in priority after safety and, since no stakeholder contested this, DP(b) is assigned Priority 2.

The method of determining the remaining DPs order of prioritisation has been determined by the comments received, not just upon the volume of responses. It is anticipated in CAP1616 that design principles may conflict or that some would be more important to one organisation than another. Therefore, blending of the priorities is required and, recognising all the comments provided through engagement, they are summarised as follows:

Priority	Design Principle
1	DP(a) Provide a safe environment for airspace users
2	DP(b) Provide access to sufficient area for both training and operational objectives
3	DP(d) Where possible and practicable, accommodate the emerging Airspace Modernisation Strategy DP(e) Minimise the impact to other airspace users
4	DP(f) Endeavour to make the airspace as accessible as possible DP(g) Use Flexible Use of Airspace (FUA) principles to manage the airspace as far as is practicable (Efficiency and Airspace Sharing)
5	DP(h) Use standard airspace structure where possible (Conformity, Simplicity and Safety)

Section 3

Next Steps

This document will be submitted to the CAA as evidence to support Step 1B of the CAP1616 airspace change process.

This will complete the documentary evidence for the Stage 1 Assessment Gateway (document deadline 17 Jan 20, for the CAA's Assessment Gateway scheduled for 31 Jan 20).

The planned CAP1616 timeline is as follows:

CAP 1616 Gateway	Planned Date
Stage 1 – Define	31 Jan 20
Stage 2 – Develop & Assess	18 Dec 20
Stage 3 – Consult	29 Oct 21
Stage 4 – Update and Submit ACP	14 Mar 22
Stage 5 – Decide	20 Sep 22
Stage 6 - Implement	AIRAC 01/23