



GUIDANCE DOCUMENT

Notified Airspace as part of a C-UAS Strategy

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Executive Summary

- Airspace change is a tool sites can use, on a temporary or fixed term basis, to support a Counter Uncrewed Aerial System (C-UAS) strategy.
- There are 3 different types of Notified Airspace (NA) that can be introduced should it be appropriate and proportionate to do so; Danger Area, Restricted Area and Prohibited Area.
- There are a range of benefits, as well as limitations in creating Notified Airspace. These are site-specific and need to be fully considered prior to an application for creating a Notified Airspace.
- Airspace change is often considered for safety and security purposes. However, other environmental, privacy and data protection considerations may also be appropriate and lawful reasons.
- Airspace change should be considered and supported by key internal and external stakeholders.
- Any application for a Notified Airspace needs to be appropriate and proportionate to the risks to the site.
- The process for submitting a NA application, or entering into the airspace change process, is explained in CAP 722C (Section 2.1) and CAP 1616 (Part 1).
- Following a successful application, it is recommended a communication campaign is developed, including signage, as well as an update to response plans, to help maximise the effectiveness of the airspace change.

Introduction

The purpose of this document is to provide UK National Infrastructure (NI) sites, sensitive sites, and crowded places with an introduction to airspace change. Specifically, the considerations attached to the introduction of Notified Airspace as part of a C-UAS strategy, and the subsequent management thereof.

The advice in this document will support stakeholders who are considering airspace change as part of their site's wider security strategy. It is primarily focussed on the mitigation of risks posed by Uncrewed Aerial Systems (UAS) but acknowledges that crewed aircraft may also need to be considered simultaneously as part of an airspace change application.

This guidance highlights factors that sites may wish to consider before pursuing an application for the implementation of a Notified Airspace above their site, as well as the considerations around management of a Notified Airspace should an application be successful.

What is Notified Airspace?

Notified Airspace is used in this guidance as a general term which is inclusive of the following types of airspace mitigations: Prohibited Areas (PA), Restricted Areas (RA) or Danger Areas (DA).

Airspace mitigations can be appropriate considerations where the level of threat from, or to, aviation justifies introducing proportionate changes to airspace over a site.

For example, if a UAS over a site would result in a safety or security concern, it might be appropriate and proportionate to introduce a Notified Airspace.

Such airspace change can be permanent, or it may only be required at key times, on a temporary basis.

Airspace change is often considered for safety and security purposes, but environmental, privacy and data protection considerations may also be appropriate and lawful reasons. By law, any application submitted to the Civil Aviation Authority (CAA) seeking airspace change must be based on a convincing ‘public interest’ case, with safety being key.

A Notified Airspace will only be appropriate where all other alternatives to mitigating a perceived aerial threat have been put in place or considered for implementation but negated for justifiable reasons.

How does Notified Airspace fit into a C-UAS strategy?

The decision about whether a site should apply for a Notified Airspace should be considered as part of a site’s C-UAS strategy and plan, a process which is set out in the NPSA guidance document titled ‘*Countering Threats from Uncrewed Aerial Systems – Making Your Site Ready*¹’.

A Notified Airspace should be considered during Step 3 of the NPSA framework for Countering Threats from Uncrewed Aerial Systems, as illustrated in Figure 1.

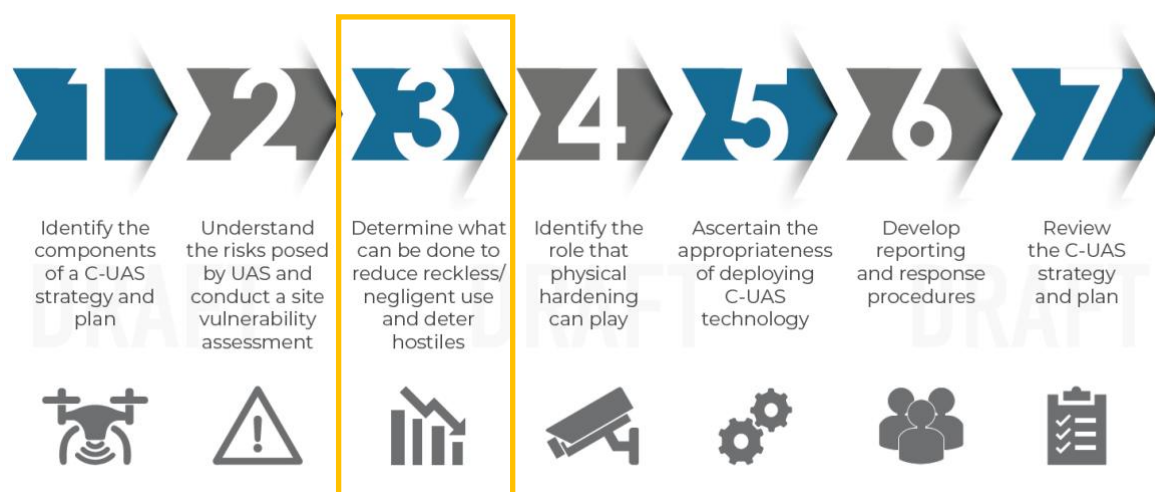


Figure 1. Framework for Countering Threats from Uncrewed Aerial Systems

¹ <https://www.npsa.gov.uk/countering-threats-unmanned-aerial-systems-uas>

Notified Airspace Definitions

In the UK, airspace change is being implemented through pre-existing legislation and procedures, under the Air Navigation Order 2016 (as amended) and in accordance with the procedural advice provided in CAP 722C² and CAP 1616³ with further associated information in CAP 1618.

Details of UK airspace classifications and status can be found in the UK Aeronautical Information Package (UK AIP) at the NATS Aeronautical Information Service (AIS) website⁴. UAS only airspace restrictions are not placed on General Aviation (GA) maps to reduce map clutter. There is a range of UAS flight safety information and mapping which does include UAS only restrictions, available to the public through UAS safety and information applications.

The following describes the different types of Notified Airspace as currently defined by the CAA. Each can be specified for crewed and/or uncrewed aircraft.

Danger Area (DA) and Temporary Danger Area (TDA)

A defined volume of airspace, within which a protected site's activities may continually or periodically pose a danger to, or be threatened by, the close proximity of aircraft. Through the introduction of the DA, a process is put in place whereby individual(s) responsible for the DA, known as the airspace 'sponsor', activate the DA or TDA by a 'Notice to Aviation' (NOTAM).

A NOTAM is communicated to aviators by established and recognised means. Ultimately the decision on whether to fly into a DA or TDA is at the discretion of an aircraft Commander. Any aircraft may enter the airspace without the crew seeking the airspace sponsor's permission at the aircraft commander's discretion. Such entry is at the aircraft commander's risk. An 'airspace sponsor' is the person given responsibility for the management of NA by the Department for Transport (DfT).

Restricted Area (RA) and Restricted Area Temporary (RA(T))

A defined volume of airspace, within which aircraft activity is restricted to specifically permitted activity only. The pilot of an aircraft may only lawfully fly there if permitted to carry out flights within the parameters of specific conditions. Permissions and conditions are provided by the airspace sponsor. Failure to fly within these conditions is unlawful and comes with legal consequences. Restrictions can be permanent (RA) or temporary (RA(T)) and are notified to aviators and the public by NOTAM and through the NATS AIS, a 'Briefing Sheet' related to the NOTAM may be communicated.

Prohibited Area (PA)

A defined volume of airspace, within which flights are prohibited. The only discretion for entry to air crew is with the airspace sponsor's specific permission, or in an aircraft emergency.



Pilots who deliberately ignore or inadvertently fly into a restricted airspace may be reported to the relevant authorities by the airspace sponsor or the Police. Following an investigation where wrongdoing is proven, a pilot might require to be re-educated, prosecuted, and/ or otherwise sanctioned for breaching the Air Navigation Order 2016 (a).

² <https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=415>

³ <https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=8127>

⁴ <https://www.nats.aero/do-it-online/ais/>

Benefits of Restricted Airspace

Supporting the site security strategy and response

A Restricted Airspace (RA) creates a defined volume of airspace with understood boundaries and provides potential for enforcement action.

A restriction can be difficult to justify but will support a site's overarching C-UAS security strategy by making flight over that site potentially illegal, as opposed to relying on voluntary pilot compliance.

If managed effectively, airspace restrictions can help sites develop proportionate response procedures in the event of UAS incursions.

An airspace restriction can also support the use of Counter-UAS technology, if required, although this will require further site-specific planning to understand whether the volume of airspace restricted is sufficient.

Promotes staff monitoring

In the same way that a site's boundary fence is monitored, RA must be monitored too. Site personnel should keep a constant eye on movement in to, out of and around the relevant airspace, to ensure pilot compliance.

Raising public awareness

Details of NA are placed in the public domain, so by creating NA over a site it can raise awareness for non-malicious users and reduce the number of reckless or negligent UAS flights over the site. An airspace change should also be supported by a communication campaign to help raise public awareness of any change in airspace.

It can also act as a deterrent to those who may seek to use a UAS maliciously by demonstrating that the site has taken steps towards aerial mitigation and that the staff there are monitoring aerial activity. It can provide an impression of airspace security.

With RA in place, appropriate signage can also be placed at likely UAS launch sites identified during the Vulnerability Assessment⁵, acting as a reporting line for the public if they observe a UAS. Signage also informs UAS pilots that the site is actively maintaining aerial security.

Help assess pilot intent

One of the hardest things during a UAS sighting is to determine the intent of the pilot. For example, is the UAS pilot a hobbyist or is it something more malicious. Flying within an airspace restriction without permission, can be an indicator of potential malicious intent as the pilot could be deliberately ignoring the restriction.

Such an indication can help security personnel make rapid decisions, which is particularly important during a UAS incident, where there may be very limited time to assess the situation and decide how best to respond proportionately. If the UAS shouldn't be there at all, there is less need to spend time interpreting what is going on before deciding on response action.

Help identify friend from foe

An airspace restriction will result in legitimate flights being permitted by the airspace sponsor. A fit for purpose flight permissions, conditions and notification process will enable the site staff who are monitoring the airspace, to quickly recognise permitted flights from non-permitted flights. This will only be effective if the RA is monitored continually.

⁵ <https://www.npsa.gov.uk/resources/countering-threats-uncrewed-aerial-systems-assessing-threat-vulnerability>

Providing support to geo-awareness and geo-fencing

The official aeronautical data set will inform geo-awareness capabilities. Manufacturers and flight application providers can support NA compliance through the provision of 'Geofenced' zones and NA mapping respectively. Such information may prevent some UAS from entering restricted volumes of airspace through an alert to the pilot, or by stopping the UAS from flying into the NA by technical means. Whilst neither are full proof, both are useful means of gaining airspace compliance and mitigating some risk.

Lawfully enables police powers in C-UAS response

UK legislation states UAS incursions into restricted airspace can provide UK Police with immediate lawful authority to implement C-UAS options. Police C-UAS teams cover all regions of the UK and are trained and equipped to act when necessary.

Limitations of Restricted Airspace

Restrictions will not physically prevent a determined malicious user

NA alone does not physically stop one or more UAS from entering the airspace. The pilot(s) can decide to ignore NA if they choose.

Public database

Every form of NA will be recorded on aeronautical data sets which are publicly available. If a site is covert or management does not want to draw unwanted attention, NA might not be a suitable option. However, there might be options available for covert sites, such as offsetting the centre point of the NA but still covering the site being protected.

Notified Airspace Management

Where any type of NA has been established, a permissions process must be set up and maintained by the airspace sponsor. This is done to lawfully manage requests from the aviation community and allow the sponsor to consider access for legitimate airspace users on a case-by-case basis.

A method of monitoring aerial activity within and close to NA is essential and may be a pre-requisite for the NA to be granted by the DfT. Both airspace monitoring and flight permissions activities may be time-consuming depending on the size and location of the NA.

In addition, the site will require a mechanism for complaints escalation if the NA itself, or a denied access request is felt to impact unfairly on legitimate airspace users.

Further, the site will have to ensure that its Data Protection and associated processes are fit for purpose, as the flight permissions process will likely involve handling personal data.

The need for such processes highlights the importance of staff training.

Balancing proportionality with site security

To ensure sites are not unduly impacting legitimate airspace users, all forms of NA must be justifiable in terms of public interest and any granted authority applied fairly and proportionately by the airspace sponsor.

These considerations must inform the size and/or shape and times of the effect of NA. Restricted and Prohibited Airspace requires high standards of justification and high standard of management.

Considerations Prior to Application

It is recommended sites consider the following questions prior to applying for a Notified Airspace.



What is the current state of your airspace?

When considering applying for airspace change, the first requirement is to fully understand the nature and use of the airspace above your site.

An understanding of the airspace over your site, and the pattern of use, is essential before pursuing airspace change.

It may be that your site has a relatively simple airspace structure above it, or it may be that your site is already located under some form of NA, for example an aerodrome's Flight Restriction Zone (FRZ).

If your site is already under an existing NA sponsored by a person not connected to the site, check the wording of the pre-existing Notified Airspace Statutory Instrument (SI). It is unlikely an existing NA will appropriately legislate for a second site.



Have you completed a UAS Vulnerability Assessment?

Sites should complete a UAS Vulnerability Assessment (VA) prior to applying for a Notified Airspace. The VA sets out the location of the site, the UAS threat scenarios a site is most concerned about, which assets are vulnerable to UAS, the base level of UAS flights in the surrounding area, and the likely UAS take-off and landing locations near to the site.

Guidance on completing a VA is set out in '*Countering Threats from Uncrewed Aerial Systems – Assessing The Threat And Vulnerability.*'

The VA will underpin an understanding of any requirement for a NA application. It will detail and justify perceived threats and what should be planned to best mitigate the perceived threats. Conversely, the VA may be written justification for not seeking to establish airspace mitigations.



Have you set out the risks a Notified Airspace would help mitigate?

The VA will help sites clearly identify the UAS security risks to their site, including for example, severe disruption, crime, hostile surveillance, or payload delivery.

It might be necessary to demonstrate all aerial threat(s) to the site, including crewed aviation if applicable.

In addition, sites should consider non-security related risks too. This can include safety, environmental, privacy and data protection risks.



Do you require a UAS only Notified Airspace?

UAS can present unique safety and security threats which are not all replicated by crewed aircraft. This means some sites may benefit from UAS only airspace restrictions, while for

some it may be necessary to restrict both UAS and crewed aircraft. The justifications will vary dependent on the site-specific risks.



How will the Notified Airspace help maintain safety and security?

To support a NA application, it needs to be clear how the proposed location, size, shape, and timing, will have a positive effect on site safety and security.

In addition, plans for airspace monitoring, patrol plans, pre-planned multi-agency responses, local community communications (including the aviation community), signage, decision making processes and any planned C-UAS technology, should be set out to demonstrate how they will help support and maximise the benefits of the NA.

If the NA extends beyond the site, consideration should be given to who responds to an unauthorised incursion if required. For most sites, this will require engagement with local Police.



Have you engaged the necessary stakeholders?

Local partners, such as the Police, should be consulted when planning any airspace change. It might be appropriate to agree thresholds for notifying local Police when there has been an unauthorised incursion into a restricted airspace, including what information and how Police want an incursion reported. Also consider whether a Marine Restriction (MR) or Notice to Mariners (NM) is required where sites, events, or routes are within a distance from a body of water used by mariners.



What is the impact on legitimate airspace users?

Any foreseeable impact on the aviation community must be considered and accounted for in a NA application.

Consider engaging with the local aviation community, including air traffic controllers to understand the impact of the proposed NA on legitimate flyers. Are there any neighbouring sites/ flying clubs nearby that might be impacted? Are you able to compromise on NA exemptions being provided, or special processes created to minimise the impact, or can you rethink the size, shape, or timings of an airspace restriction to limit any adverse impact on legitimate aviators? However, any compromise should not be to the detriment of NA effectiveness.



Is your NA request proportionate?

Your NA request needs to be proportionate to the aerial threat to the site. How does the NA link in with other security measures in place for the site? Are there other security measures in place that support the proportionality of a NA request? Factors that could help determine proportionality include:

- A VA highlighting where your site-specific risks and how the NA can help reduce risk.
- Past incidents, local knowledge, or any relevant intelligence.
- How the site activity is critical as part of the National Infrastructure.
- The level of disruption that would be caused if there was an aerial incident (economic, national security, VIPs, reputational, iconic event, etc.)

- If applying for RA, consider appropriate location and proportionate volumes and timeframes for the restriction to be in place.



Have you got appropriate sign-off and an authorisation process agreed?

Consider who in your organisation needs to sign-off the application. Is it the same person who will be the airspace sponsor, authorising flights and managing any complaints? Support or endorsement from Local Police could also help with the application. Sites should consider a review period for any new NA, to assess effectiveness whilst minimising impact on legitimate airspace users.

Application process

The process for submitting an application, or entering into the airspace change process, is explained in CAP 722C (Section 2.1) and CAP 1616 (Part 1). It is also useful to be familiar with CAP 1618. The CAA and/or any airspace change advisor may assist you with your application.





CAP 722C and CAP 1616 provide potential timeframes for the process and explanations as to what activities may require to be reconsidered at various stages if issues in the application arise.

Airspace change applicants are encouraged to carry out as much work as is possible prior to application and make best efforts to ensure that the application requirements are largely met before the submission. This will give confidence to the authorities and partners that the site management are comfortable with their understanding of the process and what requires to be in place to manage Notified Airspace.

Optimising a Notified Airspace

Following a successful application, the following activities are recommended to help maximise the effectiveness of the airspace change.

	<p>Key stakeholder engagement: Local responding agencies should be made aware of the detail of the approved Notified Airspace and confirm the previously agreed roles and responsibilities are still accurate.</p>
	<p>Communication campaign: To optimise effectiveness of NA and minimise the number of unintentional or negligent incursions, it is important to communicate to the public that the NA is in place and have a plan for ongoing public communication. Consider using a range of communication platforms (site or event website, social media briefings, etc.). Ongoing communications will assist in improving compliance and reduce the potential for complaints.</p>
	<p>Signage: Consider the placement of signage around the NA footprint, particularly in areas which are known to be likely launch sites identified in your VA. Ensure any existing signage is updated to represent the correct legal language of your NA.</p>

	<p>Update response plans: It is recommended response plans are updated to include the monitoring and enforcing of NA. As part of the response planning, consider the implication of an UAS pilot ignoring NA and liaise with local Police at the planning stage, to arrange how to communicate airspace breaches. It is recommended calls of any breaches are assessed, recorded, notified to all required partners, and responded to timeously and effectively. Alongside local Police, consider how best to gather evidence of offences committed to support the Police and/or CAA in any investigation. In addition, inform staff of the changes to airspace and familiarise them with their role in reporting airspace breaches and expected responses.</p>
	<p>Deconfliction plans: It is recommended a sound process for distinguishing authorised from unauthorised UAS use is introduced. Unauthorised flights must be identified very quickly, so sound deconfliction planning is key.</p>
	<p>Flight Authorisation Process: The authorisations process for UAS flights should sit alongside the monitoring and enforcement of the airspace. To support this authorisation process, sites should consider training appropriate personnel, providing them with processes for airspace monitoring, means of communication, and partner contact information. The flight authorisation personnel should have the capability to provide lawful permissions, conditions, and denials. In addition, personnel should feel comfortable dealing with airspace user complaints, recording and log keeping, evidence gathering, all in line with the appropriate data protection and privacy policies.</p>
	<p>Testing and exercising: Consider testing and exercising the revised response plans, both internally for site staff and externally with key stakeholders. Internal exercises may benefit the organisation and trained individuals with airspace responsibilities to keep their skill levels up, as well as reassure the CAA that the NA is being effectively monitored and enforced.</p>

For general advice, the **CAA Airspace Regulation Team may be contacted at arops@caa.co.uk**

The team may be able to provide guidance, but the details and competent submission of any airspace change proposal is the responsibility of the applicant.

References

NPSA C-UAS guidance - <https://www.npsa.gov.uk/countering-threats-unmanned-aerial-systems-uas>

CAA Drones - <https://www.caa.co.uk/drones/>

CAA Drone and Model Aircraft Code –

https://register-drones.caa.co.uk/drone-code/the_drone_code.pdf

CAA CAP 722C -

<https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=415>

CAA CAP1616 -

<https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=8127>

NATS AIS - <https://www.nats.aero/do-it-online/ais/>