Dear [insert name],

I hope this letter finds you well.

You may recall we contacted you back in July with regards to ACP-2021-032, sometimes referred to as Project Arrow.

We refer to the area described in this ACP (Airspace Change Proposal) as an Arrow Drone Zone. The Arrow Drone Zone will be operated & managed by Altitude Angel and will demonstrate how manned and unmanned aircraft are able to harmoniously share the sky, safely and securely.

As a valued member of the aviation community, I requested your feedback to a temporary ACP we were in the process of submitting to the Civil Aviation Authority (CAA).

Since then, we have received feedback on our proposal from stakeholders and it is to this end I write. I would like to update you on where we are in the process and to draw your attention to a small number of amends we have made to the original proposal.

- Crossing service replaced with live flight portal showing flights
- TDA shape and size adjusted in response to feedback
- No operations will be undertaken when cloud base is at or below 1000ft AGL

Crossing Service Changes
In our original proposal we mentioned the desire to offer a crossing service. As we are not an ANSP we are unable to offer this service. Although the TDA will potentially be in place for 90 days, we will be clearly publishing, at least 48 hours in advance, all flight activity. Flight durations are anticipated between 15 – 60 minutes. The TDA will only be active for the flight duration at the times stated. If there is no flight activity listed on a particular day and time, the TDA will effectively be unused by us on those days. In addition, interested parties will be able to call our hotline number – published by NOTAM and on all our digital maps – to ascertain whether we are planning flying operations on any given day or not.

Stakeholders will have an option to opt-in to our planned flight activity list. This will mean pilots who check a flight briefing in the morning and are informed we plan drone operations, which are later cancelled, will be able to receive an email from us stating so. As we do not hold a radio licence, we are unable to communicate with pilots by radio. To

request to be added to the mailing can be done so via
stakeholder_engagement@altitudeangel.com

TDA shape and size adjusted in response to feedback
As we have gone through this ACP process, we have received feedback which led us to change some aspects of the TDA parameters. The Cessna Group operate out of the Englefield Estate, utilising a grass strip on the northwest corner. Due to the proximity of the TDA meant it would interfere with its monthly operations. After discussions with them, we have now reduced the top westerly corner, shown with the blue outline, to the new shape now highlighted with the red outline.

We also updated the shape around R104 Burghfield to ensure it followed more accurately the curve of the airspace shape.

On the east side of the proposed TDA we have utilised existing infastructure to protect areas, such as our take off and landing area. With the windturbine standing at over 400ft tall, the Madejski Stadium, and other local tall buildings, we felt there was no reason to extend the TDA further into Reading.

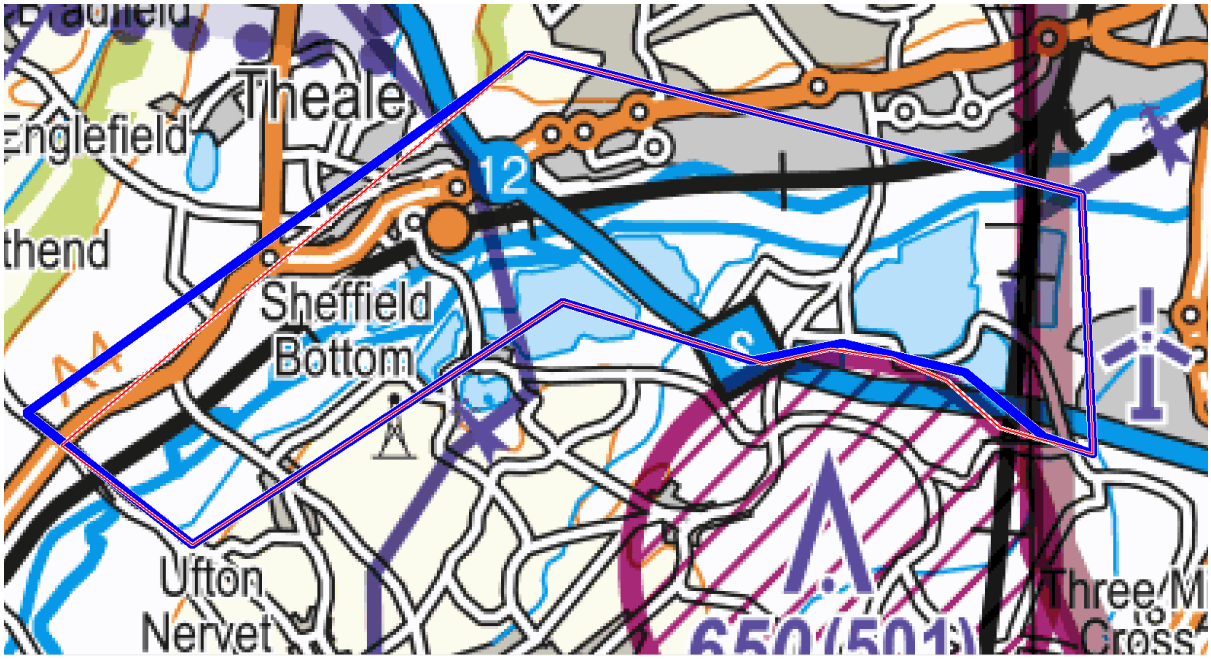


Figure 1 Blue Depicts Original Proposed TDA. Red Line Shows Final Proposed TDA Shape with height of SFC-800FT AMSL

No Operations will be undertaken when cloud base is at 1000ft AGL

We received some feedback with regards to the cloud base. It was highlighted by a stakeholder when the cloud base is low, GA traffic reduce altitude, increasing the density of the activity within this area. We will not be operating when the cloud base is at 1000ft or below AGL. We will be utilising web base services, such as windy.com, to monitor this.

To recap, this ACP is different in its approach from others you may have seen. Ultimately, it aims to enable the safe integration of drones, sometimes called Unmanned Aerial Vehicles (UAVs), into unsegregated airspace in an area running parallel to the M4, south of Reading, in the conditions described in the following paragraphs.

The trial is to test ground based Detect And Avoid (DAA) technology we call *Arrow*® and is being tested & evaluated via multiple partners as part of the government's Future Flight programme.

We are working closely with the CAA Airspace Team and following the ACP process. It is the process for temporary changes to the notified airspace design as detailed in Part 1a of CAP1616.

This ACP process can also be reviewed in the Airspace Change Portal. Here, all our documentation, engagement materials and diagrams can be found. Also, any results from the stakeholder engagement will uploaded here.

Who is Altitude Angel?
Based in Reading, Altitude Angel is an aviation technology company which creates global-scale solutions to enable the safe integration and use of UAVs and autonomous drones into global airspace. Simply put, we build the digital infrastructure necessary to allow drones and manned aircraft to share the same skies together, safely, around the world.

You can find out more about Altitude Angel here.

The Project
We refer to the area described in this ACP as an Arrow Drone Zone. The Arrow Drone Zone will be operated & managed by Altitude Angel and will demonstrate how manned and unmanned aircraft are able to harmoniously share the sky, safely and securely. To clarify, Project Arrow places no special or different equipage requirements on manned aircraft operating in the vicinity.

The proposed Zone has been put forward as part of the CAA's Innovation Sandbox under the moniker 'Project Arrow' and will be situated south of Reading, Berkshire. It will be approximately 8km in length and 120m wide and will serve to extend enhanced DAA capabilities to drones flying within the Zone.

To clarify, Project Arrow places no special or different equipage requirements on manned aircraft operating in the vicinity.

Drones flying within the Arrow Drone Zone will be tracked and monitored via Altitude Angel's UTM (unified traffic management) platform, GuardianUTM O/S, which communicates with ground and aerial infrastructure. In doing so, it provides automated navigation assistance for drones flying within the Zone, pre-flight authorisations, and automatic separation assurance.

Nearby manned aviation and even non-participating drones will be mapped in real-time so safe distances are maintained, and appropriate avoidance actions can be taken if they are predicted to be breached. If a future conflict is predicted, drones involved will be automatically given appropriate avoidance instructions, such as an instruction to change flight path, hold, return or land. A remote pilot will also be alerted, and manual control of the drone can be taken at any time.

Drones flying within the Arrow Drone Zone need no specialist equipment, such as new sensors, to utilise the zone. However, we require all drone operators flying within the Zone cooperatively to be appropriately trained, insured and have the appropriate certifications.

Once the technology has been successfully demonstrated, we believe we can do away with the need for ACPs to be requested where our platform is utilised, therefore allowing both drones and manned aviation to share the same sky safely.

Further details of the intended route and operating times are discussed below or can be found on the CAA Airspace Change Portal.

About ACP-2021-032
The proposed ACP intends to create a corridor between a field (X) and (Y). Ultimately, decisions on the geometry, altitudes and schedule are made based on the feedback from all airspace stakeholders. The earlier we receive this feedback, the easier it is for us to come up with a solution which causes the least impact on everybody's operations.

We do wish to draw attention to the fact it was our strong preference the airspace remain unsegregated, thus allowing manned aircraft to still navigate the area. However, we need to demonstrate and collect evidence to the CAA UAS Team the DAA system is sufficiently effective to enable BVLOS in unsegregated airspace.

CAA policy states BVLOS activity, which has not demonstrated the required DAA capability, be wholly contained in a TDA. The team will initially start with Visual Line of Sight (VLOS) flight trials, moving on to Extended Visual Line of Sight (EVLOS) flight trials finishing in August. We will then progress to Beyond Visual Line of Sight (BVLOS).

As has previously been stated, we have been working very closely with the CAA and were one of the initial parties to be invited into its 'Innovation Sandbox' programme in 2019-2020. Although no longer in this programme, we were actively encouraged to "...deploy our equipment as fast as possible" to be able to remain within the programme and to be able to start collecting important evidence for the CAA.

One of the questions the CAA asked us to address was 'why could the technology deployed for Project Arrow not be deployed in an existing TDA?' As our necessary equipment to support our activities proposed in this ACP was, particularly in 2020, in a much earlier state of research, we needed to site our equipment somewhere very close to our headquarters in Reading, so our teams could more easily travel to it daily. In addition, when selecting this precise location and route, we also needed to meet several other important constraints in

order we may test the efficacy of our equipment in an environment which is as 'authentic' and 'non-artificial' as possible, i.e. one which closely represents the type of environment we hope to be able to deploy within.

This meant we had to find an area where we could (a) physically site our equipment, (b) was ideally not constrained legally by another airspace structure, (c) featured a complex mix of ground infrastructure, including rail and motorway, (d) where both ends of the corridor were surrounded by businesses and potential users/beneficiaries of drone technologies, and (e) where we could reasonably be expected to be able to negotiate safe passage to land which had minimal pedestrian traffic.

Given these constraints, we carefully selected our route and minimised its extent as far as possible to enable us to meet our design objectives, evidence gathering initiatives, all the while minimising as far as possible the impact to other stakeholders.

Our proposal is therefore requesting a narrow corridor over the lakes to the south of the M4 motorway, between junctions 11 and 12.

Figure 2 Proposed ADZ Route Shown In Green over the lakes along the M4

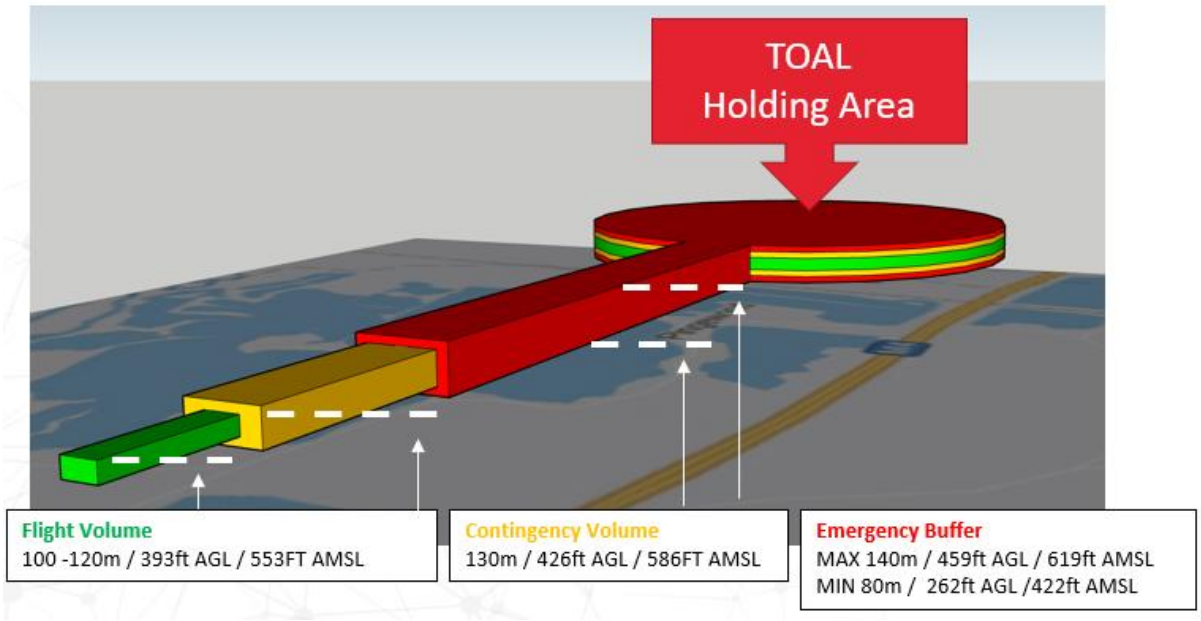
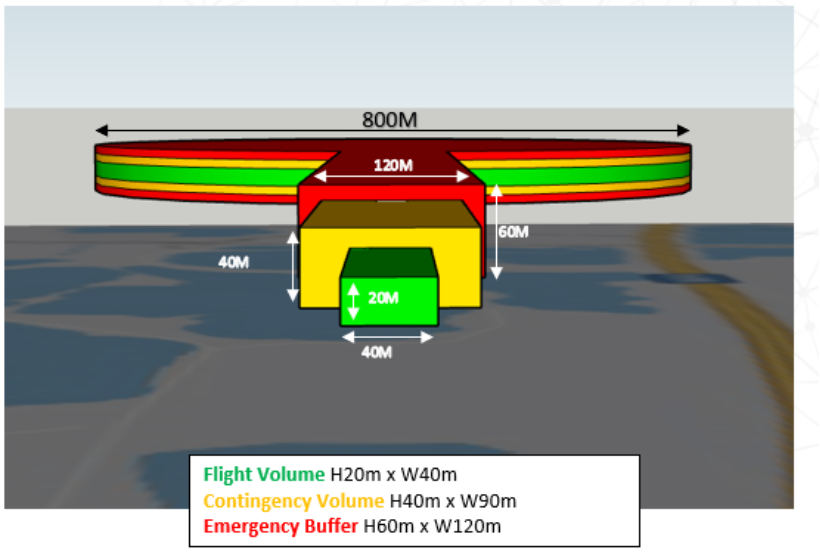


Figure 3



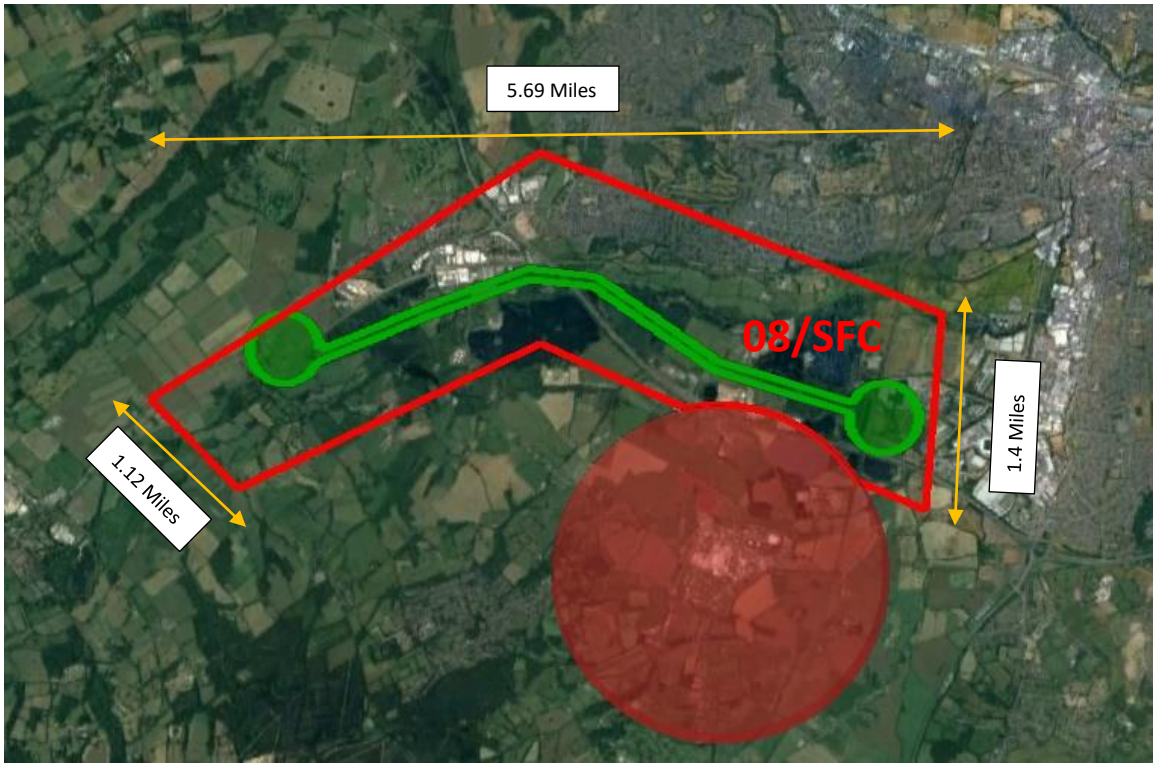


Figure 5 Whilst under testing our ADZ Corridor will sit inside this Dimensioned TDA at SFC-800ft AMSL

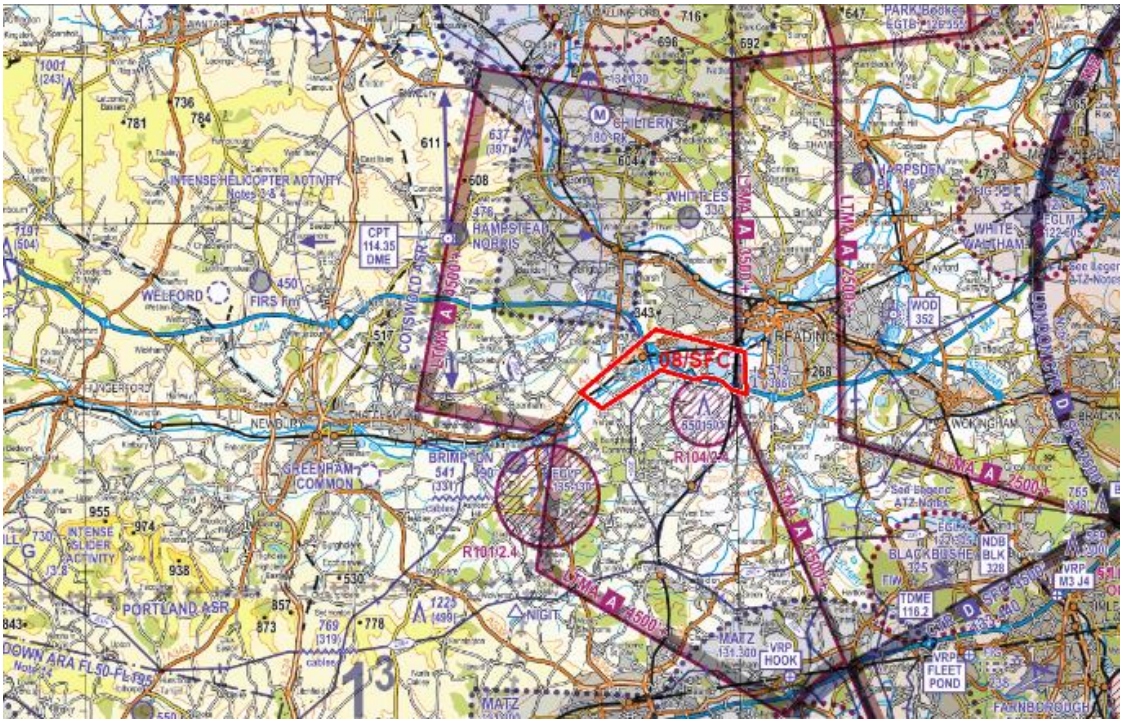


Figure 6 Proposed Final TDA Shape at SFC-800ft AMSL *Following Feedback ON CAA 1:250K England South Chart*

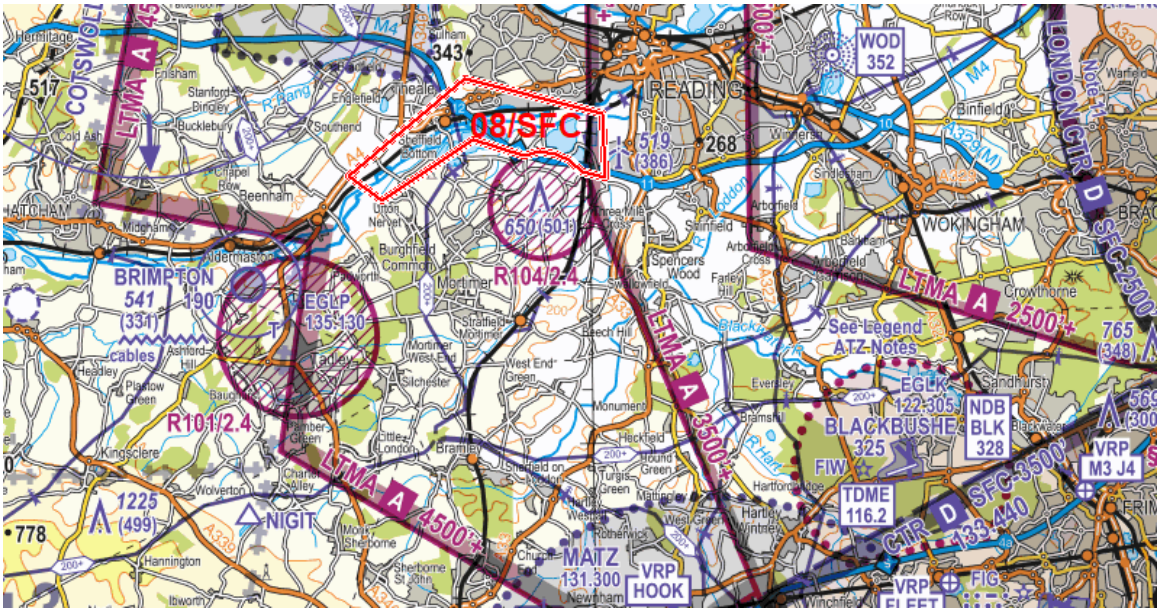


Figure 7 A Closer look at the Proposed Final TDA Shape at SFC-800ft AMSL Following Feedback ON CAA 1:250K England South Chart

		LAT	LONG		Upper Limit AMSL FT	Lower Limit (ft)
1	North West Point	51.416848°	-1.118742°	51°25'01"N , 001°07'07"W	800	SFC
2	Most North Point	51.446442°	-1.060493°	51°26'47"N , 001°03'38"W	800	SFC
3	North East Point	51.435025°	-0.992504°	51°26'06"N , 000°59'33"W	800	SFC
4	Start of Arc	51.417181°	-1.003014°	51°25'02"N , 001°00'11"W	800	SFC
5	Centre	51.404284°	-1.024849°	51°24'15"N , 001°01'55"W	800	SFC
6	End Of Arc	51.422423°	-1.032000°	51°25'21"N , 001°01'55"W	800	SFC
7	South East Point	51.415080°	-0.991375	51°24'54"N , 000°59'29"W	800	SFC
8	South West Point	51.408918°	-1.102702°	51°24'32"N , 001°06'10"W	800	SFC

°

Note: The Arc shape butts up next to the R104 Airspace of Burghfield

As you can imagine, if we are successful in this endeavour, this will open more of the sky nationally and hopefully reverse a trend of TDAs being issued for drone operations.

It is anticipated the TDA will be activated via NOTAM with a minimum of 24 hours in advance and will be available for activation between Monday – Friday 9am-6pm. Flights will be submitted to Altitude Angel 48 hours in advance and will be displayed on the free-to-access website www.dronesafetymap.com, This will allow all airspace users to check operations ahead of any planned flights.

The TDA will only be active when drone operations are taking place. Flight durations will be anywhere from 15 to 60 minutes. Prior to operations starting, Altitude Angel's DAA

surveillance system will ensure there is low airspace activity before approving flights. This will continue over a period of up to 90 days. We are proposing operations will commence in March 2022.

Complaints whilst temporary change of airspace is in operation
CAP 1616 (paragraph 303) asks we record, assess, and respond to complaints.

While the temporary change is in operation, the CAA requires the change sponsor:

"…to undertake regular engagement with stakeholders, and to collate, monitor and report to the CAA on the level and contents of complaints associated with any temporary airspace arrangement once it has been implemented and throughout its period of operation."

Should you wish to make a complaint, please contact us via the details given below.

Why are we contacting you again?
During the planning of this airspace change we have identified several members of the aviation community which may be affected or may have interest in this airspace change, and we believe you (or the organisation you represent) fall into this group. You have been contacted as part of a targeted stakeholder engagement outreach programme intended to:

- Update you on the project's progression,
- ensure the safety and operational viability of the project,
- keep you informed of any changes to the ACP-2021-032 process,
- make sure that the principles of design and the proposed ACP will not have a harmful on other aviation activities, and
- develop deconfliction procedures with selected agencies to preserve adequate separation between the Unmanned Aircraft and other frequent airspace users.

Additionally, we believe - as we are sure many of you do - the solution to integrating commercial drone aviation into our skies safely is not further segregation, but safe integration. We therefore welcome and encourage any feedback you have on this ACP and our endeavours. We look forward to engaging on any challenges you foresee such that we can resolve them in support of this goal.

How to submit your feedback
Feedback can be submitted either electronically to stakeholder_engagement@altitudeangel.com or by post to:

Project Arrow – Stakeholder Feedback
Altitude Angel,
6th Floor, The Blade,
Abbey Square,
Reading, RG1 3BE

Your feedback is very important to us, so please do respond (even if it is only to say, 'good luck!'). If you have any questions or queries, please do not hesitate to ask them and we will aim to get in touch within three working days. Please submit your feedback by midnight on Friday, 07 January 2022.

We look forward to hearing from you.

Yours sincerely,

David Walters
Altitude Angel
Project Arrow Lead