Ministry of Defence

ACP-2021-006 - ENABLING BVLOS UAS OPERATIONS FROM KEEVIL AIRFIELD

STAGE 2 ENVIRONMENTAL IMPACT ASSESSMENT

1. This document forms part of the overall submission of Stage 2 of ACP-2021-006 in accordance with the requirements laid out in CAP 1616 and supplements the Stage 2B Initial Options Appraisal.

2. The aim of this document is to outline the methodology the Sponsor used in assessing the consequential environmental impact of any of the proposed Design Options against the "Do Nothing" option. In accordance with CAP 1616, the environmental impact of military activity will not be considered during this ACP. However, the environmental impact from other air traffic as a result of the introduction of a new airspace structure must be considered.

3. The Sponsor notes that (although not required in CAP 1616) in order to mitigate against the impact of noise from its own aircraft on the local community, a Design Principle to reduce the impact of noise was added to the list of Design Principles. Any feedback received throughout the ACP regarding noise produced by the Sponsor will be addressed during the Stage 3 consultation and is therefore not considered in this document. Minimising operating noise from the Sponsors' activities will be achieved mostly through operating procedures rather than airspace design but, in order to meet the Design Principle, the airspace structure should be able to facilitate such procedures.

4. Feedback already received regarding consequential noise produced by other aircraft will be considered by applying variations in the sizes and shapes (as much as possible) to the proposed Design Options to facilitate the optimal traffic flow. More dedicated estimates of the impacts of noise on health and quality of life[1] will be made during the Stage 3 consultation with stakeholders.

Aircraft Activity Impact

5. Due to an undetermined number and type of aircraft transiting through the Class G airspace, no data was able to be collected to accurately determine noise impact or greenhouse gas emissions to set a base standard[2]. Additionally, owing to the option for aircraft to use multiple routes and altitudes during their transit of the area, which significantly alters the results of noise model assessments, initial attempts in creating a quantitative assessment[3] have not provided useful data. It was however

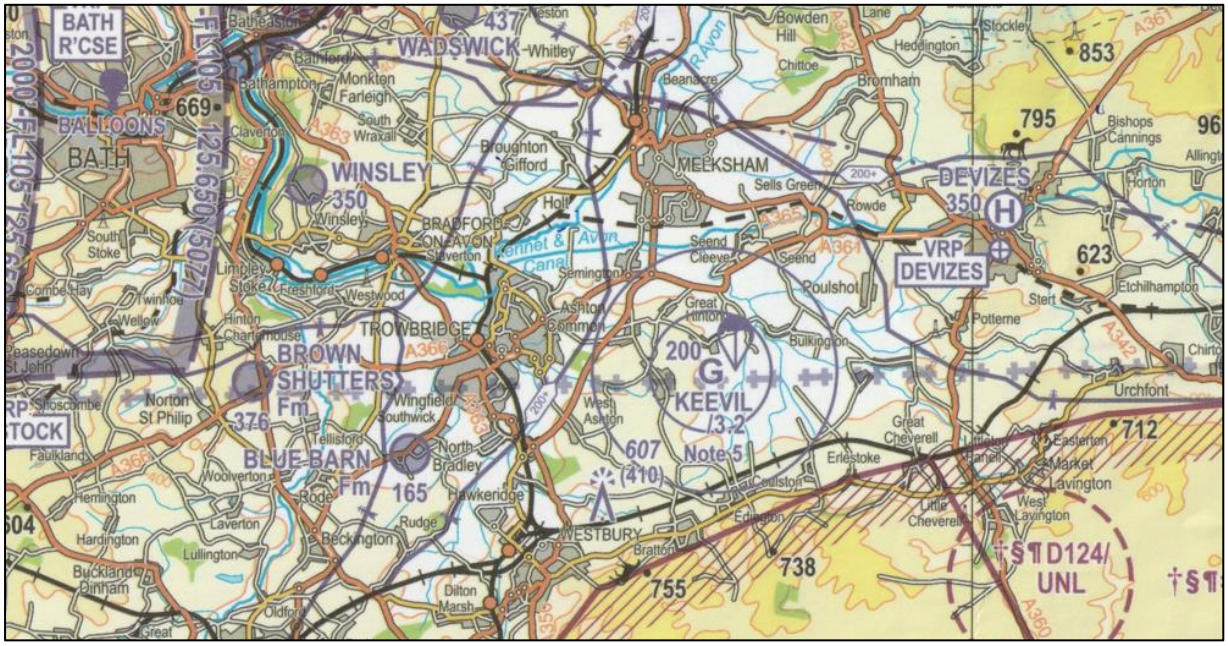
[1] CAP 2091 para 3.8
[2] CAP 1991 para 163 – inability to accurately calculate traffic in Class G airspace
[3] WebTAG A3 did not provide useful data due to the majority of the metrics required being unknown.

possible, using ADS-B data, to differentiate between commercial, civil and military traffic, and it is assessed that very few, if any commercial traffic will be impacted[4].

6. Due to the lack of quantifiable information available, a noise modelling category could not be determined as per CAP 2091 para 2.8. Should a category need to be assigned, the most suitable is Noise Model Category E. Monetisation of the impact could therefore only be displayed in terms of the additional requirements for each type specific aircraft. The Sponsor has therefore conducted a qualitative assessment based on set assumptions discussed below in order to determine the environmental impact.

Current Situation

7. The Sponsor has made the following observations based on available data and used the information below to conduct a qualitative assessment on the consequential environmental impact of introducing an additional airspace structure at Keevil. The impact assessment is based on comparison to what is currently believed to occur in the vicinity of Keevil due to the existing airspace structures (DZ / gliding site).



5. KEEVIL AERODROME (511850N 0020643W). In addition to use as a Glider Launching Site, Keevil is used extensively as a Military Dropping Zone. Pilots are advised to avoid the aerodrome at all times by 2NM laterally and 2000ft AAL vertically. (Keevil elevation is 200ft AMSL).

8. From ADS-B and MLAT tracks it is assessed that:

a. Aircraft are already primarily routing North East to South West (or vice versa) passing to the north of the Keevil DZ.

b. A lesser number of aircraft are using the railway line between D123 and Keevil as a VFR navigational aid in order to avoid glider activity or, when published, paradropping.

[4] The Wiltshire Air Ambulance HQ sits underneath the northern flightpath. The exact increase (if any) to the level of traffic in the overhead will be determined during the Full Options Appraisal.

c. Paragliding activity from Westbury White Horse does not impede the DZ

d. No commercial routes are affected.

9. **Assumptions.** The Sponsor has made the following assumptions in order to set a base standard that can be used to assess environmental impact of any new airspace structures at Keevil. It is assumed that:

a. Pilots planning to fly through the Keevil area will conduct flight planning prior to their departure and will determine whether or not Keevil is active.

b. Pilots unable to determine whether gliding activity is taking place will plan to overfly the area in accordance with Note 5 of VFR charts and due to the risk posed by winch launching (up to 3,200ft amsl).

c. If NOTAM'd as active, pilots may plan to fly over the DZ/ gliding site (if possible) depending on the altitude NOTAM'd (the DZ may be activated up to FL150). Pilots may in addition determine whether it is safe to cross but must plan an alternative should this not be possible.

d. In cases that the area is NOTAM'd as active, pilots unable to climb will plan to fly around Keevil between Frome, Trowbridge and Melksham.

e. Pilots planning to overfly the area are likely to start their climb at a greater distance away from the lateral confines of the airspace structure. Adopting a gradual climb to altitude is more likely than flying to the lateral confines of the structure and then commence a steep climb to above the airspace.

f. A DACS can be provided by Boscombe ATC as per the TDA in 2021 when the airspace is active. The provision of a DACS underpins some assessments made on environmental impacts (noise, CO2 and traffic flow) later in this document.

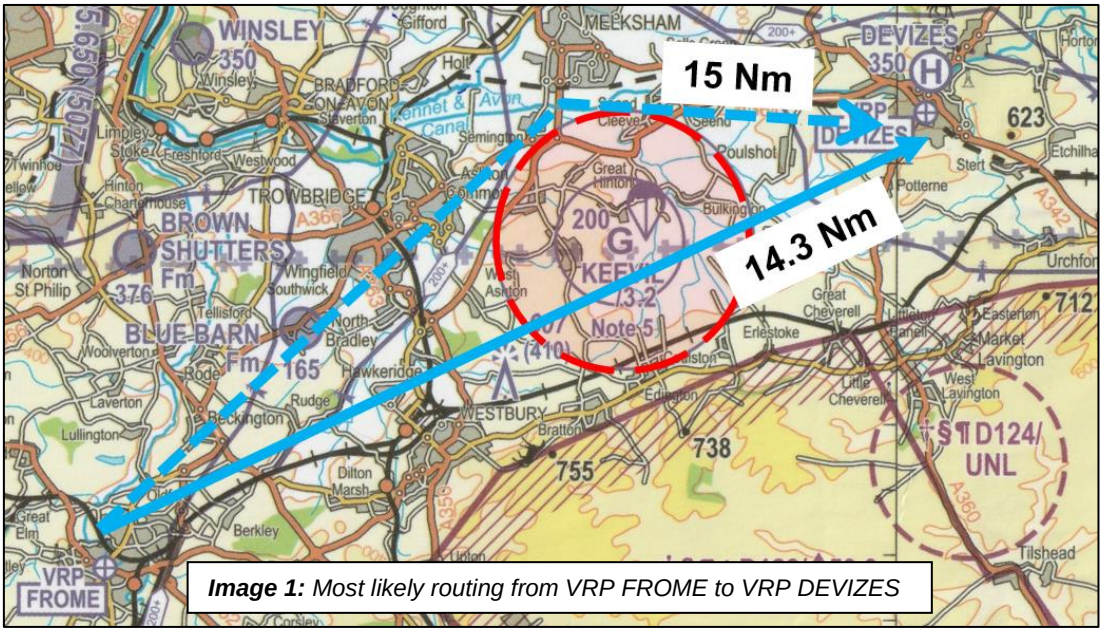


Image 1: *Most likely routing from VRP FROME to VRP DEVIZES*

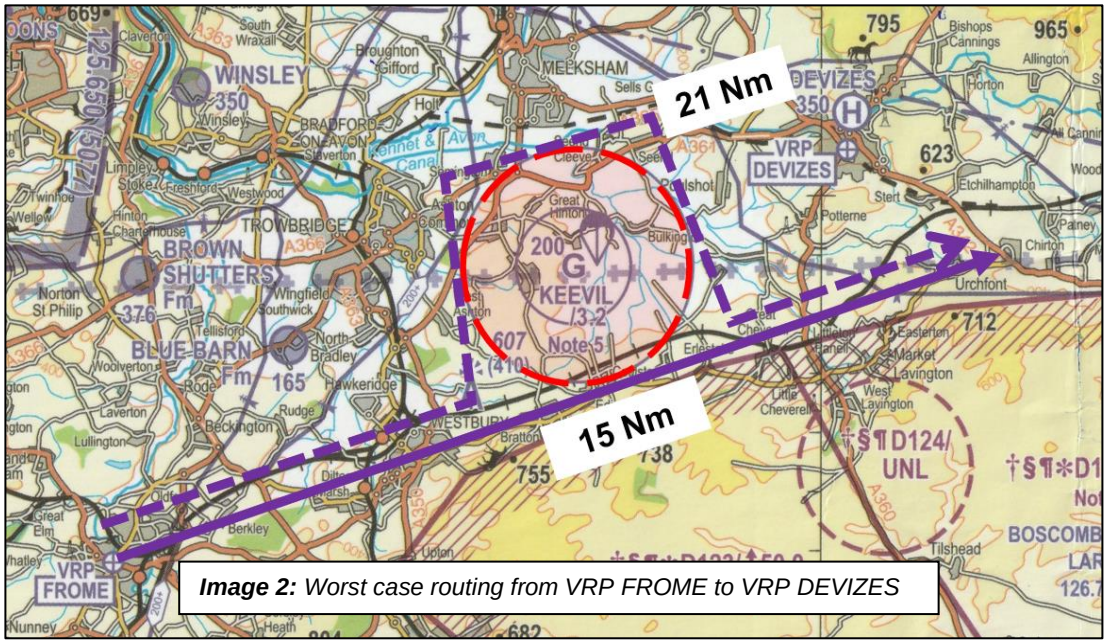


Image 2: *Worst case routing from VRP FROME to VRP DEVIZES*

New Airspace Structure

10. Based on the assumptions above, pilots planning to fly through the Keevil area may required to take the following additional measures as a result of any new airspace structure created at Keevil. This only applies when the newly proposed Design Options are active:

a. Pilots wishing to climb to an altitude in order to overfly / avoid any new airspace structure, may be require to climb to at least 3500ft amsl in order to fly over the new Keevil airspace[5]. This may be lower than what they would have had to climb to in order to cross an active DZ (max FL150) and marginally higher than what the 3,200 ft amsl vertical limit published on the VFR chart for the winch launching.

b. Pilots wishing to route around any new airspace structure at Keevil will follow a similar track to those aircraft wishing to avoid the DZ / Glider site when active. Routing will most likely be required around the northern edge of the airspace structure.

11. The Sponsor has therefore made the assessment that the resultant routes chosen by pilots due to any new airspace structure at Keevil will be **similar** to that of the existing airspace structures, requiring passing aircraft to route around or climb to overfly the airfield. However, dependent the on air user and their equipment, a crossing of a new airspace structure may not be possible which will force these aircraft to route around or above.

12. The Sponsor further assessed that there may be some **reduction** in traffic North of the DZ and a resultant **increase** to the current use of the Keevil airspace by those pilots who are currently avoiding the overhead due to Note 5 in the VFR chart or glider activity. Since transiting pilots who normally route around Keevil may now

[5] 3500 ft AMSL based on the previous TDA used at Keevil as a comparison. The resulting airspace structure from this may be different.

choose to fly through the overhead using a crossing service, slightly reducing their route length, fuel consumption and aircraft congestion North of Keevil.

Impact Conclusion

13. **Noise.** The Sponsor is unable to apply a specific Noise Modelling Category to this ACP. The Sponsor assesses that any additional airspace around Keevil airfield (when active) will not result in an increase the number of aircraft operating in or around the area. Additionally, it will not change the type of aircraft operating, therefore aircraft will produce the same level of noise impact as is currently produced. Due to similar routing of aircraft, the amount of residents impacted remain largely the same. Aircraft affected are those **below 4000ft amsl.** The Sponsor does not believe that powered aircraft passing through this area will exceed 30 per day and therefore the lowest observed adverse effect level (LOAEL) will not exceed 51 dB Leq. The individual noise impacts on an additional airspace structure are:

a. **No change** in noise compared to the current situation.

b. **An increase** in the amount of aircraft routing North when a new airspace structure is active and a crossing service unavailable or climb overhead not possible. There will be no change in the level of noise or the type of aircraft producing the noise as a result of the new structure.

c. **A decrease** in noise in some areas as a result of fewer aircraft routing via the railway line in between the DZ and D123.

d. **No change** in noise patterns for aircraft continuing its track through the activated airspace using a crossing service.

e. **A decrease** in noise for local residents by aircraft choosing to initiate an early climb over the activated airspace.

Note: To date, local area Stakeholders have mostly raised concerns regarding the noise produced by the Stakeholder's own aircraft and other military aircraft. Few Stakeholders have raised concerns about the additional noise produced by GA routing changes as result of MOD activity at Keevil. The Sponson notes that this in itself does not imply that there is no additional noise impact by GA and will consult directly with Stakeholders on the impact of noise during Stage 3.

14. **Emissions / Air Quality.** The Sponsor assesses that any additional airspace around Keevil will result in no change to CO2 emissions. Potential emission impacts are:

a. **No change** in carbon emissions compared to when the existing DZ is activated or gliding activity is taking place where pilots will route around it.

b. **A slight decrease** in carbon emissions for aircraft that previously routed around the airspace as a precaution (due to Note 5 on the VFR chart) should they now use a crossing service and plan a more direct routing overhead. The decrease in emissions are aircraft- specific but would see a 0.7Nm reduced route length (see Image 1).

c. **A potential increase** in carbon emissions should a DACS be denied and aircraft are forced to route around the North of Keevil for an additional **0.7Nm**. Similarly, there would an unquantifiable increase in emissions for aircraft having to climb above the airspace which is higher than what aircraft may currently plan to climb to.

15. **Economic Impact.** The Sponsor assesses that any additional airspace around Keevil may require an additional 0.7Nm worth of fuel per aircraft type. There are no additional training burdens for pilots however should pilots not currently qualified to use an airband radio choose to apply for a Flight Radio Telephony Operators License (FRTOL) in order to benefit from any crossing services, they will incur a cost for additional training (however, as this is Class G this would be entirely discretionary). The individual economic impact assessments are:

a. **No change** in fuel usage compared to when the existing DZ or glider site is active and pilots are required to route or above or around it.

b. **A decrease** in fuel usage for aircraft that previously routed around the airspace as a precaution (due to Note 5 on the VFR Chart) should they now use a crossing service and route direct. The decrease in fuel cost is aircraft type specific and cannot be accurately monetised.

c. **An increase** in fuel usage for an additional **0.7Nm** should a crossing not be possible (see image 1 above).

d. Should a design option's vertical dimension be higher than 3,200ft amsl there will be a **marginal increase** in fuel usage for an aircraft that may currently transit overhead to avoid winch launch glider activity.

e. **A cost** of approximately **£250** to gain a FRTOL should pilots currently unable to use a radio choose to apply for a FRTOL in order to use any associated crossing services.

f. **A cost** of approximately **£200** to purchase an Airband radio should pilots currently operating without a radio choose to purchase one in order to use any associated crossing services.

16. **Traffic Increase.** The Sponsor does not predict an increase in traffic volumes as a result of any additional airspace in the area over a 10 year period. Although a quantitative assessment of traffic increase is not possible at this stage, the Sponsor is in search of technical methods to determine traffic numbers more accurately for the Stage 3 consultation phase in order to to assist in developing the Environmental Impact Assessment and Options Appraisal.

Sponsors Conclusion

17. The Sponsor will continue to refine any impacts further identified during ongoing engagement with Stakeholders throughout the ACP. The Sponsor will also continue searching for methods to allow quantitative assessments, allowing for better monetary

assessments where possible. Procedures that may mitigate against additional environmental impacts will be developed proactively and in consultation with stakeholders during Stage 3.