Watchkeeper Tactical Unmanned Air System

Overview of Keevil Airfield Temporary Danger Area

Temporary Danger Area Proposal in accordance with CAP 722 and CAP 1616

Final Submission **August 2020**

Project LOVERIDGE
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Responsible Authors of this Document

The Watchkeeper Tactical Unmanned Air System (WK) is exclusively operated by 47th Regiment Royal Artillery (47 Regt RA). Project LOVERIDGE is a 47 Regt RA internal project identifying suitable UK flying locations for WK. This Temporary Danger Area proposal will be managed by Project LOVERIDGE on behalf of 47 Regt RA and the Watchkeeper Force. The Watchkeeper Force (WKF), as a headquarters within Joint Helicopter Command (JHC), supports the delivery of the Watchkeeper programme. Only responsible authors may implement amendment via the Project LOVERIDGE lead. All revisions will be listed and detailed in the table below.

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Revision No.	Affected Part	Auth Date	Revised By	Notes
Initial Issue	All	30 Jun 20	*Project LOVERIDGE lead*	Stakeholder engagement
Final proposal	All	6 Aug 20	*Project LOVERIDGE lead*	Revised TDA
Version 2	Annex A	18 Aug 20	*Project LOVERIDGE lead*	Addition of Annex A, addition of para 25(i)

Table of Contents

1. List of Abbreviations

ACP	Airspace Change Proposal
AIP	Aeronautical Information Publication
ATC	Air Traffic Control
BVLOS	Beyond Visual Line Of Sight
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
DACS	Danger Area Crossing Service
DAAIS	Danger Area Activity Information Service
DAM	Defence Aerodrome Manual
EC	Electronic Conspicuity
FISO	Flight Information Services Officer
GCS	Ground Control Station
NOTAM	Notice to Airmen
MAA	Military Aviation Authority
PPR	Prior Permission Request
RA	(1) Regulatory Article (2) Royal Artillery
RPAS	Remotely Piloted Air System
RTS	Release to Service
SPTA	Salisbury Plain Training Area (EGD123, 124, 125, 127, 128)
TDA	Temporary Danger Area
UAS	Unmanned Aircraft System
UAV	Unmanned Air Vehicle
WK	Watchkeeper UAS
WKF	Watchkeeper Force

2. Application Process

2.1 This application for a temporary change to airspace is in accordance with CAP 1616 – Airspace Change and CAP 722 – Unmanned Aircraft System Operations in UK Airspace.

3. Regulations

3.1 UK airspace is regulated by the Civil Aviation Authority (CAA) and as such all temporary airspace change proposals are subject to its regulatory approval. The sponsor is required to adhere to the process detailed in CAP 722, Chapter 5, paragraph 1.8 for proposed airspace change detailed in the following link.

3.2 This document represents 47 Regt RA's final submission of a proposed TDA to the CAA, having completed four weeks of targeted stakeholder engagement. A full list of identified stakeholders can be found at paragraph 4.3.

4. Stakeholder Engagement

4.1 Prior to any airspace changes, the sponsor, in this case 47 Regt RA, must engage with all relevant stakeholders and third parties to identify and mitigate the potential impacts of the TDA.

4.2 The proposed TDA location has been carefully selected to satisfy 47 Regt RA's requirements whilst minimising the impact on other airspace users and stakeholders. The views and opinions of all stakeholder responses can be found on the accompanying spreadsheet.

4.3 List of stakeholders identified:

Aircraft Owners and Pilots Association (AOPA)	Compton Abbas Airfield
Airspace4All	Drone Major
Army Aviation Centre, Middle Wallop*	General Aviation Alliance (GAA)
Army Flying Association, Middle Wallop	HeliAir Thruxton
Army Gliding Club, Wyvern*	Helicopter Club of Great Britain (HCGB)
Avon Hang Gliding and Paragliding Club	Keevil Parish Council
Bannerdown Gliding Club	Light Aircraft Association (LAA)
Bristol Airport	MOD Boscombe Down*
British Balloon and Airship Club	PPL/IR (Europe)
British Gliding Association (BGA)	RAF Brize Norton*
British Hang Gliding and Paragliding Association (BHPA)	RNAS Yeovilton*
British Helicopter Association (BHA)	Salisbury Plain Air Operations*
British Microlight Aircraft Association (BMAA)	Steeple Ashton Parish Council
General Aviation Safety Council (GASCo)	Wessex Model Flying Club
British Model Flying Association (BMFA)	Western Air Thruxton
British Skydiving	Wiltshire Air Ambulance

* Ministry of Defence

5. Targeted engagement period

5.1 As agreed during the CAA assessment meeting 47 Regt RA conducted a 4-week stakeholder engagement. This engagement period began on Wednesday 1st July and closed on Friday 31st July.

6. Responses

6.1 In the interest of transparency, whilst personal information from the feedback received will be removed prior to submission to the CAA, the content will remain unchanged. All data passed to the CAA is bound by the Data Protection Act 2018. All information processed will be done so in accordance with the MOD GDPR policy.

6.2 Responses were welcomed either by letter, email or using a link to an online Microsoft Form. A total of 10 emails and 12 online form submissions were received. The raw data from the engagement period can be found at the accompanying spreadsheet.

6.3 Any concerns, where possible, were taken into account and the TDA and associated procedures have been amended in order to lessen the impact of WK operations. The summary of stakeholder feedback can be found at para. 20.1.

STAGE 1 – DEFINE

7. Requirement

7.1 This document details a proposed change to airspace: the implementation of a Temporary Danger Area (TDA) in the vicinity of Keevil Airfield, Wiltshire. This is for use by the British Army's Watchkeeper Tactical Unmanned Air System (TUAS) in support of required aircrew and groundcrew training over Salisbury Plain Training Area.

7.2 This document intends to:

a. Outline the requirement for the change.

b. Incorporate stakeholder feedback in order to minimise the impact of the TDA on other airspace users.

c. Allow the CAA to make a decision on implementing the TDA in line with the September AIC publication.

8. Statement of Need

8.1 Currently operating from MOD Boscombe Down, 47 Regt RA is in the process of developing its core capability of operating Tactical Unmanned Air Systems (TUAS) in order to deploy on future operations. Whilst Boscombe Down remains the home of UK Watchkeeper flying, 47 Regt RA requires alternative flying locations in order to facilitate the expansion of live flying activities and develop its procedures for operating from less established airfields.

8.2 The Ministry of Defence has been actively seeking to exploit unmanned platforms for a number of years. The expansion of live flying locations within the UK will allow 47 Regt RA and wider Defence to understand the full range of capabilities offered by WK. As the British Army's only TUAS operators and the only MOD large unmanned aircraft routinely flying in UK airspace, 47 Regt RA is seeking to develop its procedures for operating in UK airspace whilst delivering operational output.

8.3 Keevil Airfield has been identified as the most suitable airfield for austere WK operations and, with its close proximity to Salisbury Plain Training Area, is ideally located to support the development of tactics and doctrine as well as provide wider support to Field Army training.

8.4 Current regulations mandate unmanned aircraft that are operated Beyond Visual Line of Sight (BVLOS) must do so within segregated airspace. This proposal documents 47 Regt RA's wish to create segregation through the creation of a Temporary Danger Area (TDA) to facilitate BVLOS flying between Keevil Airfield and Salisbury Plain Training Area.

9. Aim

9.1 Establish a TDA between September and December 2020 in order to facilitate the BVLOS operation of the Watchkeeper Tactical Unmanned Air System from Keevil Airfield in order to utilise the airspace above Salisbury Plain Training Area for military training.

9.2 47 Regt RA would also like to scope the possibility of requesting a pause to the 90 day activation period at the 45 day point should the required output not be possible due to inclement weather. If the CAA indicate that this may be possible, 47 Regt RA will inform the CAA after 4 weeks as to whether it aims to continue with its preferred 90 day activation or whether it wishes to pause the TDA after 45 days with reactivation at a later date in Spring 2021.

9.3 If this option to pause the TDA activation is permitted, 47 Regt RA will engage with all relevant stakeholders at the earliest opportunity.

9.4 As this TDA seeks to inform a permanent airspace change request in due course, 47 Regt RA feels that there would be value in ensuring that maximum data can be collected during the temporary airspace change period in order to better tailor future requirements. Splitting the TDA period to avoid inclement weather will ensure maximum data can be collected, better informing the permanent airspace change proposal.

10. Objectives

10.1 Key objectives:

a. Provide segregated airspace to enable WK to launch, recover and operate from Keevil Airfield within the confines of the TDA detailed in this document, including a segregated transit route connecting Keevil Aerodrome to EGD123, activated and de-activated as required by NOTAM.

b. Use the minimum amount of airspace required to permit UAS operations in order to limit the impact to other air users.

c. Demonstrate an effective airspace management and communication plan to support the wider evolution of future UK airspace requirements and the integration of unmanned aviation within it.

d. The transfer of control of the TUAS between a Ground Control Station (GCS) located at MOD Boscombe Down and the GCS located at Keevil. Training and proof of operation will significantly extend the WK range, thereby informing capability on operations.

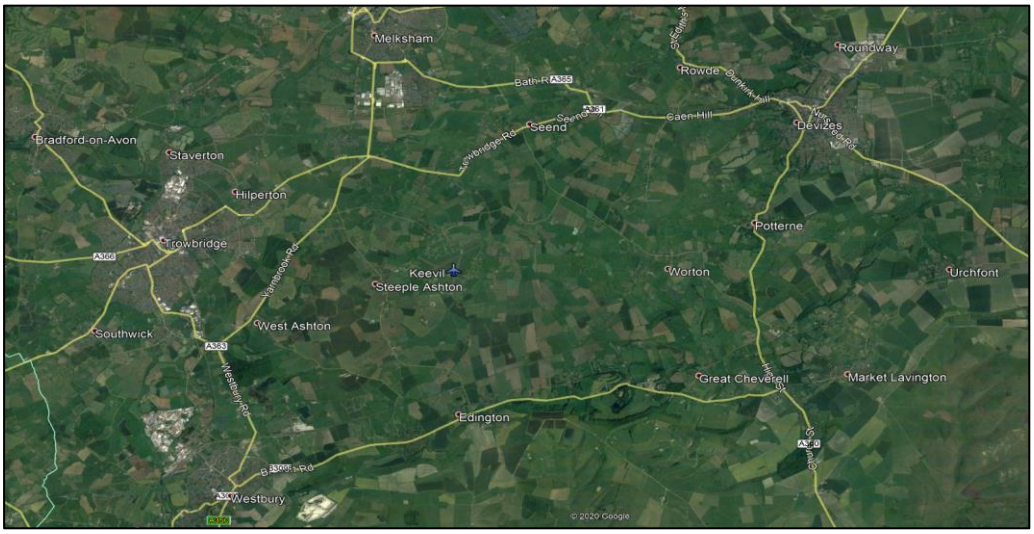
10.2 The TDA borders Danger Area EG D123 and encompasses some of the extant Keevil Drop Zone in order to utilise existing areas already notified for military activity.

10.3 The planned TDA will be utilised Monday to Friday during normal working hours, specifically 0830hrs to 1730hrs however ordinarily the TDA will be activated after 1000hrs to allow for pre-flight activity each morning. It will be activated by Boscombe Down ATC via NOTAM. The option for weekend or night flying is not currently being considered, however may be sought at a later date in consultation with the relevant stakeholders.

10.4 As part of this final submission, 47 Regt RA requests that the CAA consider whether 2 x 45 day periods may be used instead of a continuous 90 day period. This is to ensure that the airspace is utilised to its fullest extent. Currently, operation of WK is constrained by strict weather limitations, therefore, having the 90 day period across the autumn and winter months makes full utilisation of the airspace unlikely, which in turn will have a negative impact on training and output. The MOD suggest that the TDA be considered for activation from Thursday 24th September for 45 days followed by a further 45 days in Spring 2021.

11. Airfield Overview

11.1 Keevil Airfield is located to the North West of Salisbury Plain Training Area, adjacent to the villages of Keevil and Steeple Ashton. Between the airfield and EG D123 are the villages of Edington and Coulston. The larger towns of Westbury and Trowbridge are found to the West of the airfield and Melksham and Devizes to the North and East respectively.



Area in general

11.2 The airfield has one declared usable runway: 06/24 with the remaining runways forming taxiways in a triangle layout. These taxiways (01/19 and 12/30) are also deemed suitable runway surfaces for WK launch and recovery.

Airfield in detail

11.3 The Keevil Drop Zone / Gliding Site is currently marked on aeronautical charts as follows:

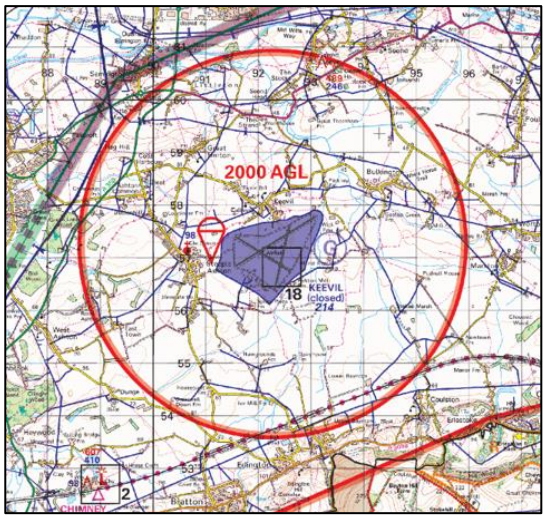
> *'Keevil Aerodrome is used extensively as a military dropping zone and pilots are advised to avoid the aerodrome at all times by 2NM laterally and 2,000ft vertically'.*

11.4 Keevil is also an active Gliding Site with winch-launches notified from SFC-3,200ft as marked on low-level charts.

12. Keevil Airfield use

12.1 Keevil Airfield is a satellite airfield of RAF Brize Norton and is utilised by military operators as a tactical landing zone, drop zone and training area for ground units. Keevil can also be used by

RAF Tactical Air Transport aircraft such as the C130 Hercules and A400M Atlas as well as rotary-wing assets from the Joint Helicopter Command to conduct tactical training.



12.2. Keevil Airfield is also home to Bannerdown Gliding Club who fly a variety of sailplanes and towing aircraft for recreational purposes. They are a member of the Royal Air Force Gliding and Soaring Association. Bannderdown Gliding Club primarily occupy Keevil at weekends however play host to a number of gliding competitions throughout the year.

12.3 The Wessex Model Flying Club also use Keevil for model aircraft flying. However, during military exercises a dedicated model flying site 3 miles from Keevil is utilised so airfield operations are not disrupted. Direct engagement has been conducted with the Model Flying Club and a local agreement signed in order to minimise impact on each activity.

13. Local Air Users

13.1 The area is popular with General Aviation (GA) traffic and it is used frequently by aircraft routing around the SPTA Danger Areas and the Bristol Control Area (Class D airspace).

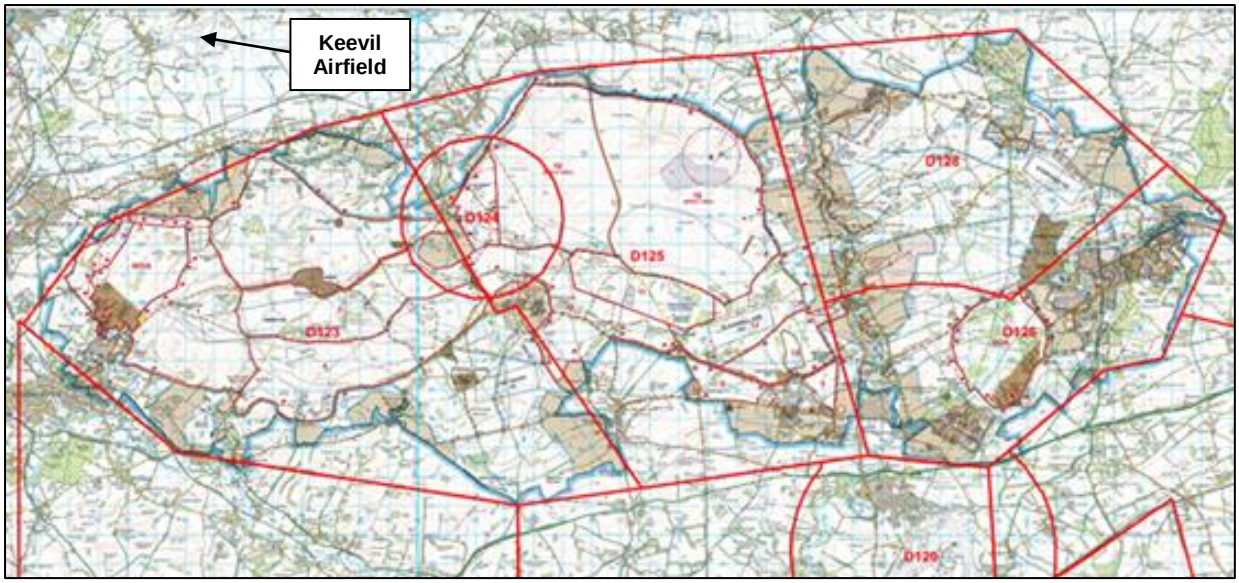
13.2 The Wiltshire Air Ambulance, equipped with the Bell 429 helicopter, operates from a private site in the village of Semington, 2.5 miles to the North of the airfield.

13.3 The Avon Hang Gliding and Paragliding Club routinely use Westbury White Horse as a launch site. This is approximately 3.5 miles South West of the airfield and marked on military Low Flying Charts.

13.4 The Edington Farm Strip at Westdown Farm is 3 miles to the South of the airfield within D123 and has a small grass strip suitable for light aircraft. Several small private grass strips exist to the North of Salisbury Plain between Upavon and Devizes which are suitable for microlights and light aircraft.

14. Existing Regional Danger Areas

14.1 The Salisbury Plain Training Area is split into a number of Danger Areas for the purpose of military air and ground training.



14.2 ENR 5.1 Extract for Salisbury Plain Danger Areas

EG D123 IMBER 511724N 0020107W - 511339N 0015746W - 511348N 0015705W - 511023N 0015325W - 511006N 0015702W - 511106N 0020713W - 511329N 0021149W - 511516N 0020939W - 511705N 0020312W - 511724N 0020107W	Upper limit: 50000 FT ALT Lower limit: SFC	Vertical Limits: Upper Limit: Up to ALT 50000 0615-2359 (0515-2300). Upper Limit: Up to ALT 3000 (OCNL notified up to ALT 50000) 2359-0615 (2300-0515). Activity: Live Firing / Bombing / Para Dropping / Demolition / Unmanned Aircraft System (VLOS/BVLOS). Service: DACS: Salisbury Operations on 122.750 MHz when open; at other times DAAIS via ATIS on 130.150 MHz or Tel: 01980-674739. Contact: Salisbury Operations, Tel: 01980-674710 or 674730 when open. Danger Area Authority: DIO SD TRG. Hours: H24
EG D124 LAVINGTON A circle, 1.5 NM radius, centred at 511527N 0015812W	Upper limit: UNL Lower limit: SFC	Activity: Live Firing / Unmanned Aircraft System (VLOS/BVLOS). Service: DACS: Salisbury Operations on 122.750 MHz when open; at other times DAAIS via ATIS on 130.150 MHz or Tel: 01980-674739. Contact: Pre-flight information / Booking: Salisbury Operations, Tel: 01980-674710. Danger Area Authority: DIO SD TRG. Hours: Activated by NOTAM.
EG D125 LARKHILL 511828N 0015004W - 511059N 0014641W - 511023N 0015325W - 511348N 0015705W - 511339N 0015746W - 511724N 0020107W - 511807N 0015635W - 511828N 0015004W	Upper limit: 50000 FT ALT Lower limit: SFC	Vertical Limits: Upper Limit: Up to ALT 50000 0615-2359 (0515-2300). Upper Limit: Up to ALT 3000 (OCNL notified up to ALT 50000) 2359-0615 (2300-0515). Activity: Live Firing / Bombing / Para Dropping / Demolition / Unmanned Aircraft Systems (VLOS/BVLOS). Service: DACS: Salisbury Operations on 122.750 MHz when open; other times DAAIS via ATIS on 130.150 MHz or Tel: 01980-674739. Contact: Salisbury Operations, Tel: 01980-674710 or 674730.

		Danger Area Authority: DIO SD TRG. Hours: H24
EG D126 BULFORD 511621N 0013746W - 511525N 0013606W - 511247N 0013759W - 511233N 0013942W - 511044N 0014308W - 511059N 0014641W - 511351N 0014759W thence clockwise by the arc of a circle radius 5 NM centred on 510912N 0014504W to 511354N 0014225W - 511621N 0013746W	Upper limit: 1400 FT ALT Lower limit: SFC	Vertical Limits: OCNL notified to FL 90. Activity: Live Firing / Bombing / Para Dropping / Demolition / Unmanned Aircraft System (VLOS/BVLOS). Service: DACS: Salisbury Operations on 122.750 MHz when open; at other times DAAIS via ATIS on 130.150 MHz or Tel: 01980-674739. Contact: Salisbury Operations, Tel: 01980-674710 or 01980-674730 or Boscombe Down ATC, Tel: 01980-663246. Danger Area Authority: DIO SD TRG. Hours: H24
EG D128 EVERLEIGH 511852N 0014215W - 511621N 0013746W - 511354N 0014225W thence anti-clockwise by the arc of a circle radius 5 NM centred on 510912N 0014504W to 511351N 0014759W - 511828N 0015004W - 511852N 0014215W	Upper limit: 1400 FT ALT Lower limit: SFC	Vertical Limits: OCNL notified up to ALT 50000. Activity: Live Firing / Para Dropping / Unmanned Aircraft System (VLOS/BVLOS). Service: DACS: Salisbury Operations on 122.750 MHz when open; at other times DAAIS via ATIS on 130.150 MHz or Tel: 01980-674739. Contact: Pre-flight information: Salisbury Operations, Tel: 01980-674710 or 674730. Danger Area Authority: DIO SD TRG. Hours: H24

15. Watchkeeper Tactical Unmanned Air System

15.1 The Watchkeeper initially entered service with the British Army in 2014. Subsequent system upgrades saw the most recent variant of the Watchkeeper receive its Release to Service certification in April 2019. The role of WK is to provide tactical level imagery and intelligence to commanders in the land environment. WK is the first UK unmanned aircraft to be fully air-worthiness certified to the same standards as a manned military aircraft.

15.2 Based on the Hermes 450 aircraft, which flew over 86,000 hours in Iraq and Afghanistan, WK includes an improved sensor-payload suite and flew 146 operational hours towards the end of combat operations in Afghanistan. Since then it has flown in the UK from MOD Boscombe Down, from the Ascension Island and most recently from RAF Akrotiri where it has already flown over 230 hours over the past 8 months. It is also flown from West Wales Airport under a Military Permit To Fly (MPTF) by Thales for Test and Evaluation purposes.

15.3 The system has a 14-hour airborne endurance and is equipped with Electro-Optical Infra-Red, Synthetic Aperture Radar and a laser sub-system. With a range of 150km LOS it is operated from a Ground Control Station by a crew of 3 and is equipped with VHF/UHF radios allowing aircrews, air traffic control and other manned aircraft to communicate directly on the appropriate channel. Electronic conspicuity is provided by a Mode S transponder and NATO standard IFF. It has an automated radar-based system for take-off and landing, akin to a deployable Instrument Landing System, with an INS/GPS backup. The aircraft does not have a breaking system and therefore requires a towing vehicle to taxi and arresting cables to safely stop on landing.

15.4 As the WK is operated Beyond Visual Line of Sight (BVLOS) it requires a block of airspace to operate in which the unmanned aircraft is segregated from other aircraft. As other air users are not permitted to enter this airspace block, the unmanned aircraft can operate without the risk of collision, or the need for other collision avoidance capabilities. As a further mitigation against the risk of Mid Air Collision WK must receive a radar surveillance service as a condition of its Release to Service.

16. UK Operations of Watchkeeper

16.1 47 Regt RA has been established at MOD Boscombe Down since 2014. After a pause to activities whilst the Regiment flew in RAF Ascension Island and on completion of an upgrade package to the aircraft, 47 Regt RA recommenced routine live flying activities from Boscombe Down in April 2019.

16.2 47 Regt RA has utilised the Salisbury Plain Danger Areas (EG D120, 123, 125, 126) to conduct live flying training from Boscombe Down. These have proven sufficient and will continue to be utilised when operating from Keevil.

17. UAS Operational Safety Case

17.1 The Watchkeeper TUAS is released to Service flying subject to the limitations stated in the MOD's Release to Service (RTS).

17.2 The limitations of the RTS are the definitive limits for the aircraft in Service regulated flying. The authority for approving changes to the RTS is vested in the Delegated Release to Service Authority (DRTSA) for the Watchkeeper UAS.

STAGE 3 – ENGAGEMENT

18. Why Keevil?

18.1 Keevil has been selected as a live flying location for WK for a number of reasons:

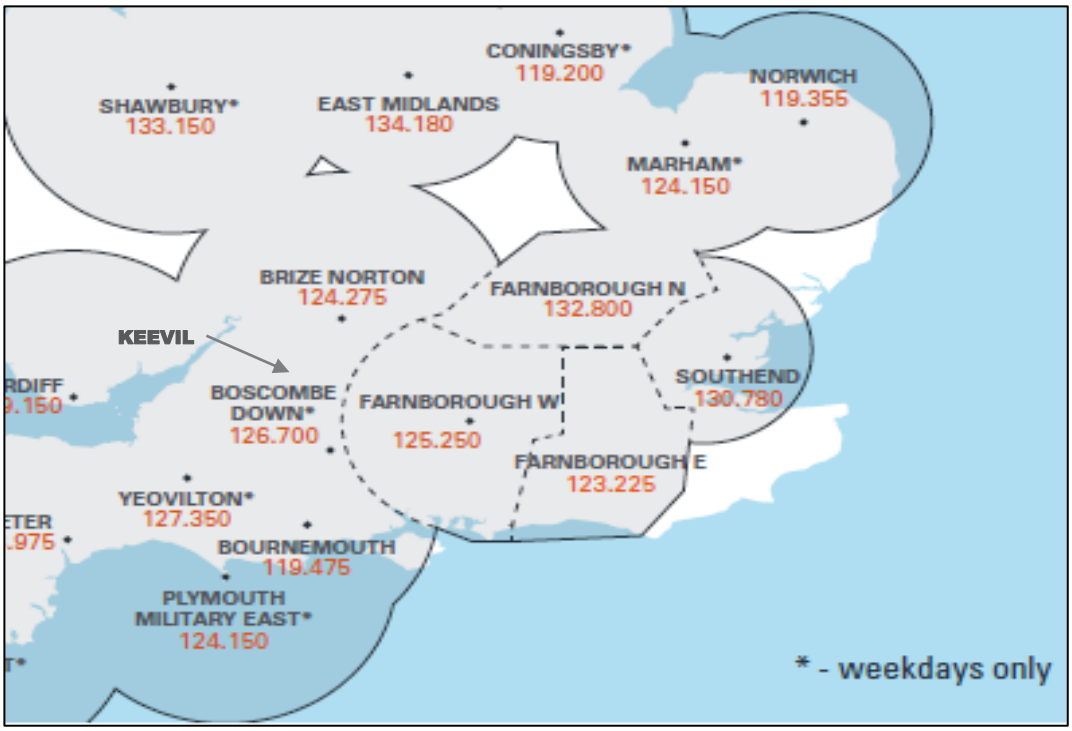
a. Keevil is an existing military airfield with the appropriate level of airfield infrastructure required for flying WK, including multiple suitable runway surfaces. Due to its current level of usage it provides an opportunity to significantly increase the rate of WK flying.

b. Given the proximity of the airfield to EGD123 it provides the same or greater training output as currently provided by operating from Boscombe Down.

c. The sparsely populated areas surrounding the airfield allow WK to be flown in accordance with its Release to Service regulations, specifically minimising the overflight of congested areas.

d. Keevil provides an opportunity for 47 Regt RA to exercise flying from less established airfields in order to refine austere deployment procedures. Keevil will also allow the Regiment to conduct certain procedures which are not possible when operating from a single location, specifically the ability for pilots to conduct a 'Hand-over send' where the crew in one location will hand over control of the aircraft in the air to another crew at a different location. This is a key element of the operational capability of the system and is something that cannot be conducted if operating from a single airfield.

e. Airspace around Keevil is monitored by several military and civilian radars with overlapping coverage of the region. Additionally, the airspace benefits from several Lower Airspace Radar Services (LARS) which aim to provide advice and information for the safe and efficient conduct of flight in the area.



Lower Airspace Radar Service Coverage in South West England

19. Original TDA proposal

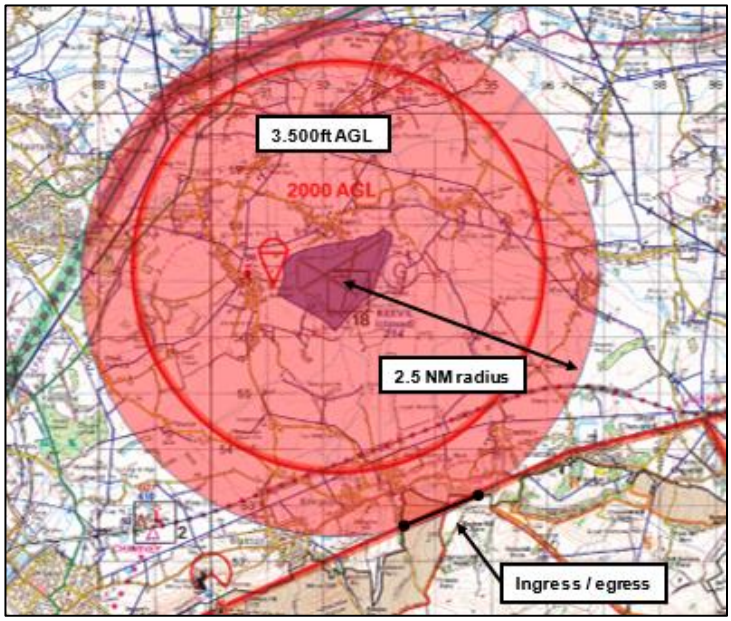
19.1 Engagement was carried out on the following proposal:

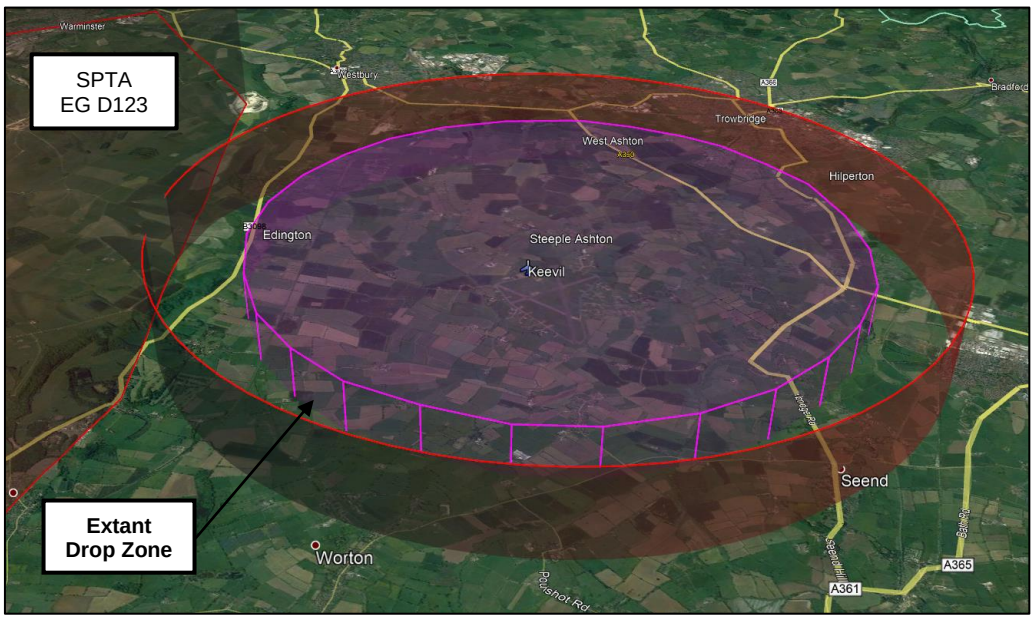
To minimise the impact on other airspace users and to minimise potential confusion the proposed TDA has been designed to be a simple shape, expanding on the already extant avoidance area published on military and CAA VFR aeronautical charts.

The TDA is designed to allow WK to launch and recover from Keevil on both runway 06/24 and 01/19. It has a 2.5NM radius from centre point of the airfield and intersects EGD123 to the South, providing uninterrupted segregated airspace for WK to operate in.

The tactical management of the TDA is to be coordinated by Boscombe Down ATC who will also act as the primary Air Traffic Service Unit for WK between Keevil and SPTA.

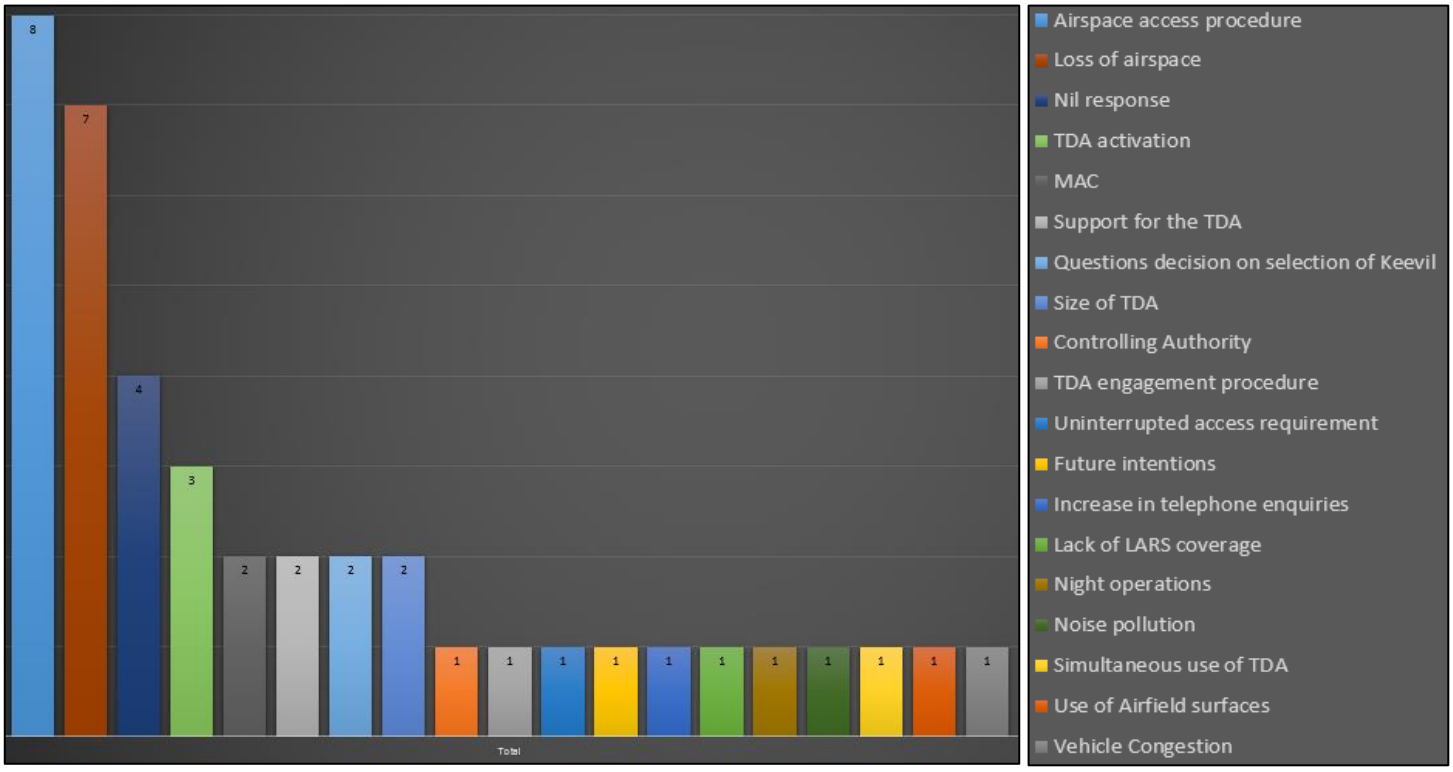
The TDA is circular in shape, with a 2.5NM radius centred on the airfield midpoint and is designed to meet the requirements of WK when transiting to SPTA. The airspace upper limit is required to be 3,500ft AGL. These dimensions ensure that in the unlikely event of engine failure the aircraft can manoeuvre back to the airfield whilst maintaining segregated airspace.





20. Final proposed TDA

20.1 The Stakeholder Engagement data can be found at Annex A and the raw, redacted responses will be uploaded to the Portal. The following summarises the key themes from the stakeholder engagement feedback. The raw data and analysis can be found at the attached spreadsheet.



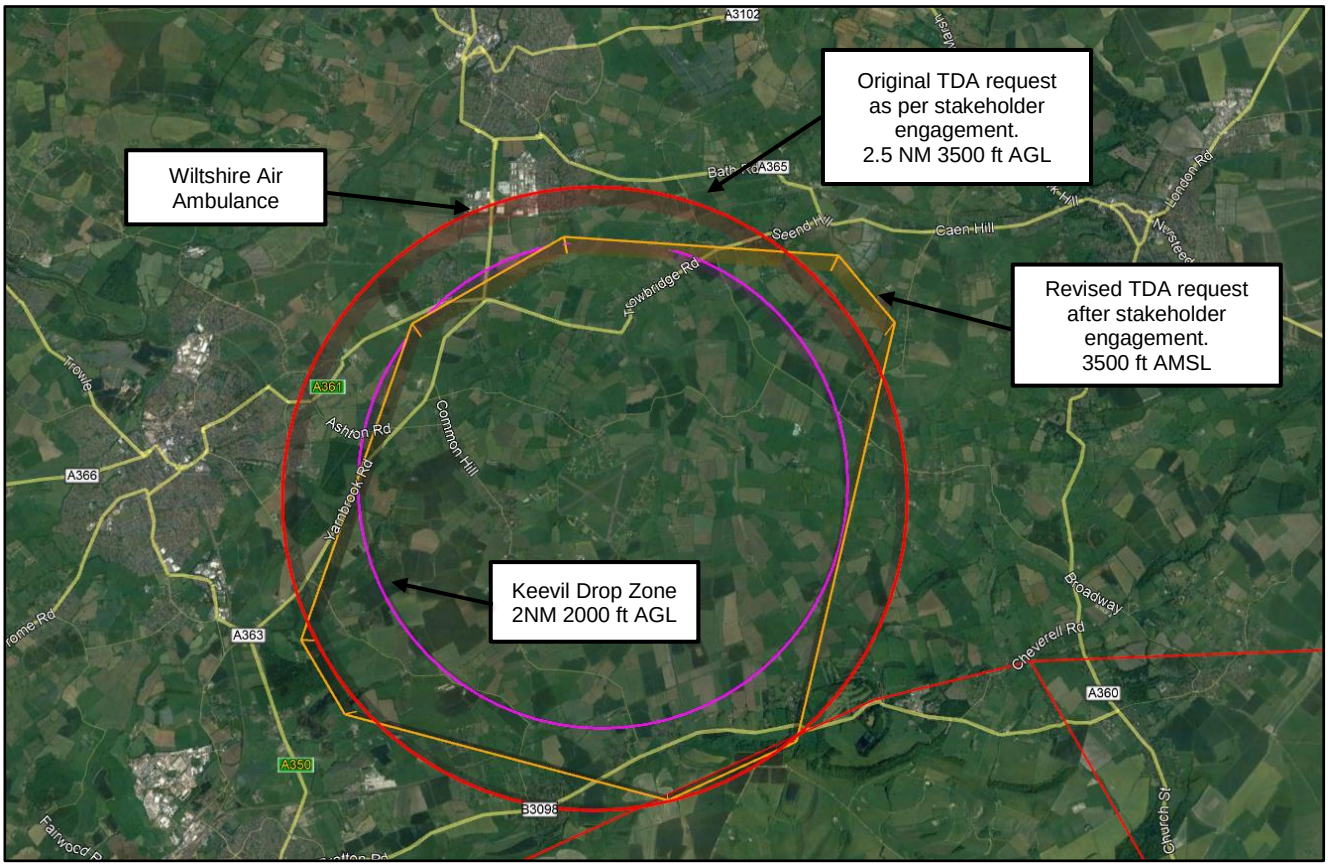
Stakeholder Engagement Feedback Trends

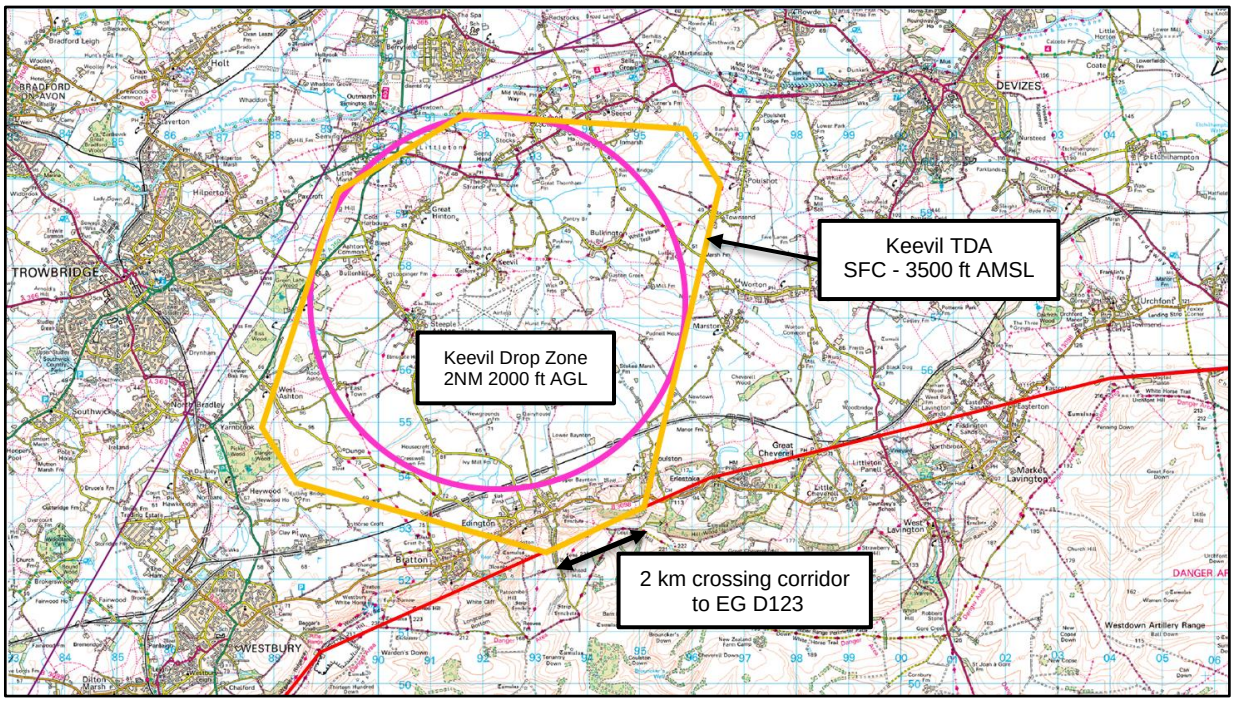
Source: Keevil Stakeholder Engagement spreadsheet

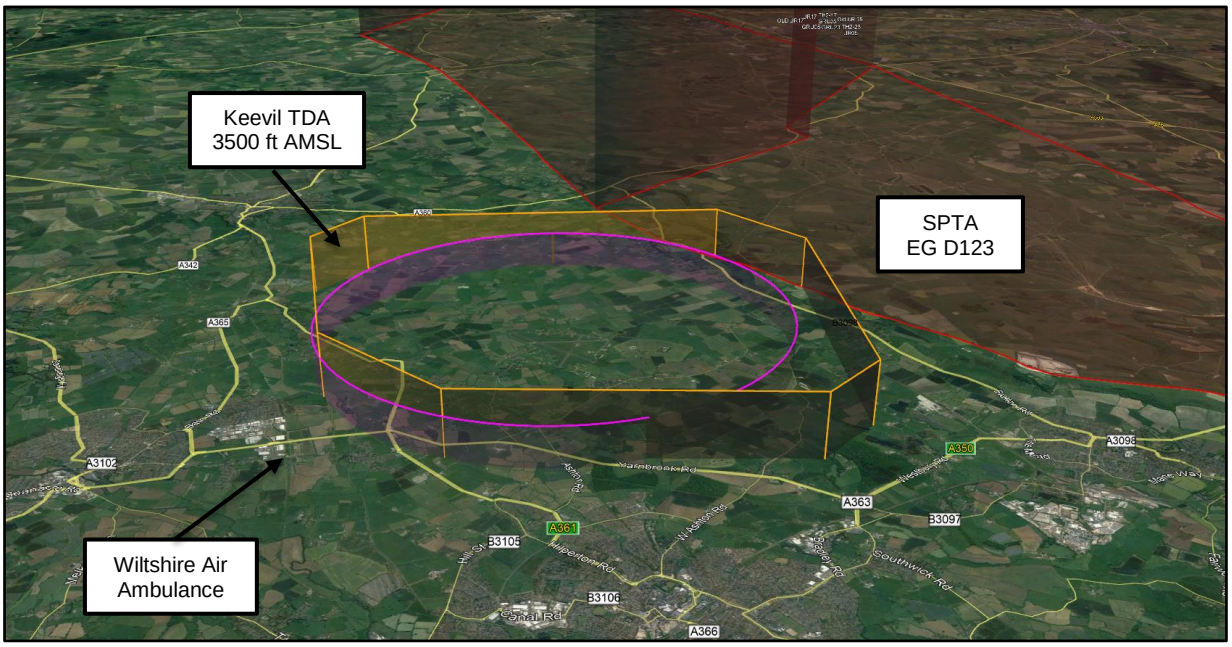
Feedback Trend	Response
Airspace access	A Danger Area Crossing Service will be available from Boscombe Zone. The airspace will be activated for the minimum amount of time that is required. No weekend or night flying is scheduled to take place. As well as Boscombe ATC, local air users can make use of the dedicated WK Keevil Operations telephone number or A/G frequency.
Loss of airspace	Concessions on the size of the original TDA have been made to allow GA traffic to better route around the TDA to the North using geographic features for navigation and to allow more hang-gliding and paragliding activities to occur to the West of the TDA. Additionally, the height has been reduced from 3,500ft agl to 3,500 amsl- a reduction of 200ft.
Size of TDA	The circular design has changed to a diamond shape. This ensures that the maximum amount of airspace can be handed back to other air users. In particular, the Northern extremity of the old proposed TDA has been reduced to allow easier transit around the TDA if a DACS is unavailable or not sought. The intended use of all runway orientations means that airspace North of the centreline of the main West-East runway is still required and therefore could not be reduced to the level recommended during engagement by some local GA and glider pilots. The size has been minimised as much as possible whilst

	still ensuring that WK can operate in segregated airspace in the event of any emergency scenario.
Noise pollution	All routes for the aircraft have been planned to minimise overflight of congested areas and avoid noise-sensitive areas. Physical inspections have taken place to ensure the routes do not overfly stables. Any overflight of livestock, particularly whilst in the circuit, has been considered.
Simultaneous use of TDA	Several stakeholders may require access to the TDA (in particular the Wiltshire Air Ambulance, Wiltshire Model Flying Club and local rotary-wing pilots operating from private landing sites). A dedicated telephone number will be available to these individuals for real-time updates on any planned activity. Additionally, letters of agreement have been drafted to ensure disruption is minimised. A local agreement with military JHC rotary wing aircraft has been made which will reduce the unnecessary transit of military aircraft North over Trowbridge and Melksham, reducing the funnelling of low-flying military aircraft.

20.2 The final proposed airspace dimensions are below (compared to Keevil drop zone and original circular proposal).







Keevil TDA 511619N 0020555W – 511659N 0021000W – 511734N 0021034W – 512007N 0020913W – 512050N 0020715W – 512041N 0020341W – 512007N 0020257W – 511646N 0020418W – 511619N 0020555W	Upper limit: 3500 FT ALT Lower limit: SFC	Activity: Military Unmanned Aerial System (BVLOS). Hours: Activated by NOTAM. Danger Area Crossing Service Contact: Boscombe Zone 126.700 MHz. Keevil A/G Radio: 129.980 MHz

21. Activation and Deactivation of the TDA

21.1 The new TDA would be permanently published for the duration of its existence but only activated when required. The normal activation period of the TDA will be Monday – Friday 1000hrs to 1730hrs local but may be activated as early as 0830hrs on certain days where weather windows or training demands dictate.

21.2 The TDA would be utilised for the duration of the UAS serial but will be available for use by other air users when WK is established in SPTA. A Danger Area Crossing Service may be utilised by local VFR traffic in order to efficiently utilise the airspace during WK sorties.

22. Airspace Management

22.1 Keevil will remain an uncontrolled airfield and WK departures and recoveries will be locally managed by WK operations. Military fixed and rotary wing assets wishing to utilise the airfield whilst WK is operating over Salisbury Plain will be encouraged to take advantage of the Keevil A/G frequency. Additionally, this will provide enhanced situational awareness to air users who may not wish to receive a service from Boscombe Down ATC but may wish to fly in the vicinity of the TDA.

22.2 WK will request a Traffic Service upon departure from as soon as radar identification is achieved at 500ft agl. The Traffic Service will remain in place throughout WK's transit to and from EG D123.

22.3 WK is equipped with a Mode S transponder and will squawk throughout the entirety of its sortie. The Ground Control Station is equipped with a VHF/UHC radio, enabling the aircrew to remain in contact with the Air Traffic Service Unit at all times. In addition, the aircraft is fitted with a Lightweight Multiband Air Radio which allows direct communication between the WK aircraft itself, ATC and other nearby aircraft operating on the same frequency.

22.4 Telephone links will be established between the aircrew in the Ground Control Station at Keevil and Boscombe Down ATC prior to operation to mitigate against air-air communications failure.

23. Airspace Flexibility

23.1 The potential funnelling of VFR traffic between SPTA and the Bristol CTA is recognised as a potential factor. However, once WK is established within EG D123 the TDA will be not be required, allowing other air users to utilise the airspace through a DACS. Additionally, the new design allows VFR pilots to route around the perimeter of the TDA utilising surface navigation features.

23.2 WK will only operate within the normal working hours of Boscombe Down ATC (0830-1730hrs), Monday to Friday thereby minimising disruption to weekend recreational flying. Should weekend flying become an aspiration, separate consultation at a later date with relevant stakeholders will occur and the NOTAM notification will be amended.

24. Emergency Access

24.1 In the event that emergency access is required into the TDA such as transit by the Wiltshire Air Ambulance, or a manned aircraft in distress, Boscombe ATC, as the TDA controlling authority, will coordinate. If airborne, Watchkeeper will be instructed by ATC to either return to base via a safe route, hold current position, ascend/descend or move to a new position to provide safe separation from the required flight path of other aircraft.

24.2 A Letter of Agreement has been established with the Wiltshire Air Ambulance to ensure there is no disruption to their operation. Robust communication between Keevil Operations and the Air Ambulance in Semington will be established each day.

24.2 Should a GA aircraft in distress require access to land at Keevil the Keevil A/G frequency will be available to provide the pilot with airfield information and allow time for WK to vacate the runway or remain outside the TDA, as required.

25. Impact Mitigation on Existing Air Users

25.1 The local airspace is frequently utilised by a variety of military and civilian air traffic. In order to reduce the impact to those users the following mitigating steps will be taken:

a. 47 Regt RA will initially only fly between 0830-1730hrs Mon – Thu and 0830-1400hrs on Friday and only at times where a lower airspace radar service can be afforded by Boscombe Down. Ordinarily WK will look to get airborne around 1000hrs daily.

b. With the exception of the proposed TDA, WK will utilise only existing Danger Areas already established for the purpose of military training.

c. A Danger Area Crossing Service will be available to pilots unable or reluctant to climb above or route around the North of the TDA. This should reduce the funnelling effect of GA traffic overhead Trowbridge.

d. All WK activity will be NOTAM'd as far in advance as possible. This will routinely be programmed 2-3 days in advance. A duty number will be available to allow local air users, particularly the gliding clubs and local private strips to understand what and when activity is due to take place.

e. With the exception of occasional functional check flights (30 mins in duration), WK will not remain within the TDA for an extended period of time. This will allow the TDA to be used by other air users as soon as practicable. This will occur in real time by ATC once WK has either established in EG D123 or successfully recovered to Keevil.

f. 47 Regt RA sortie intentions will be confirmed and communicated to Boscombe Down ATC and Salisbury Plain Air Operations as part of pre-flight briefing process. An air picture of the surrounding airspace will be sought prior to departure to increase aircrew situational awareness.

g. There will be weekly stakeholder meetings with RAF Brize Norton and Bannerdown Gliding Club to communicate airspace usage plans for the coming week. An open day for local stakeholders will be planned before live flying commences.

h. As pilots are already advised to avoid the airfield by 2,000ft and 2NM the increased fuel requirements and therefore environmental impact is assessed as negligible as aircraft will only be required to climb by 1,500ft or re-route to the North should a DACS be unavailable during the short period of WK departure or recovery to Salisbury Plain.

i. If approved, feedback and/or complaints will be handled through the dedicated email Mailbox, details of which can be found on the Portal. Additionally, for any immediate safety concerns the Duty Operations telephone number may be published on the NOTAM.

26. Local Landowners and Residents

26.1 As a military airfield, permission to use Keevil for live WK flying will be sought from the RAF Brize Norton Operations Wing. All Standard Operating Procedures for operating WK will be created in order to conform with the Keevil Airfield Defence Aerodrome Manual, particularly regulations relating to airfield operating hours and noise abatement.

26.2 Where possible, all departure and recovery routes have been designed to minimise overflight of congested areas.

27. Other Options Considered

27.1 **No Action.** Currently, the CAA and MAA stipulates that UAS must operate in segregated airspace, satisfied by operating within Danger Areas. Watchkeeper operations would therefore not be possible from Keevil Airfield without the establishment of temporary segregated airspace.

27.2 **Use Existing Danger Areas.** Watchkeeper already uses, and will continue to use, existing Danger Areas over Salisbury Plain Training Area. An investigation to utilise these areas without having to create any new airspace was considered, however:

a. No other airfields within the Salisbury Plain Danger Areas, less for MOD Boscombe Down, are currently fit for purpose for Watchkeeper operation.

b. There is limited scope for any organisational development of tactics and doctrine without establishing a training location to test new procedures.

c. Without another exercise location, WK is currently unable to maximise the training and currency of its aircrew and groundcrew as it prepares for operational deployments.

27.3 **Reduce the size of the TDA.** The TDA have been re-designed to deliver no more than the absolute minimum airspace required to safely and legally deliver the objectives of the exercise.

28. Summary

28.1 47 Regt RA intends to establish a TDA in the vicinity of Keevil airfield and Salisbury Plain Training Area. This is to undertake essential training in support of British Army Tactical UAS operations. The TDA has been designed to minimise impact on other airspace users.

28.2 It is requested that this TDA is activated from Thursday 24th September 2020 in line with the September AIC publication.

28.3 The CAA are also kindly requested to consider a pause to the TDA 90 day activation after 45 days should the output of the exercise not be at the desired level due to weather. This will ensure that maximum data can be collected by the MOD to better inform any full ACP requests in the future.

Annex A
Targeted Stakeholder Engagement Responses

This annex includes raw stakeholder responses received via the online form as well as a summary of key concerns and issues raised. All emails received by stakeholders can be found at Appendix 1 with all personal information redacted.

Table 1 – Stakeholder Responses Summary

Stakeholder	Response Received
Aircraft Owners and Pilots Association (AOPA)	0
Airspace4All	0
Army Aviation Centre, Middle Wallop*	0
Army Flying Association, Middle Wallop	1
Army Gliding Club, Wyvern*	1
Avon Hang Gliding and Paragliding Club	1
Bannerdown Gliding Club*	1
Bristol Airport	0
British Balloon and Airship Club	1
British Gliding Association (BGA)	1
British Hang Gliding and Paragliding Association	1
British Helicopter Association (BHA)	0
British Microlight Aircraft Association (BMAA) / General Aviation Safety Council (GASCo)	0
British Model Flying Association (BMFA)	1
British Skydiving	0
Compton Abbas Airfield	0
Drone Major	0
Friends of Steeple Ashton	1
General Aviation Alliance (GAA)	0
HeliAir Thruxton	0
Helicopter Club of Great Britain (HCGB)	0
Keevil Parish Council	1
Light Aircraft Association (LAA)	0
MOD Boscombe Down*	1
National Police Air Service (NPAS)	0
PPL/IR (Europe)	0
Private aircraft owners with MoU with SPTA	0
RAF Brize Norton*	1
RNAS Yeovilton*	1
Salisbury Plain Air Operations*	1
Steeple Ashton Parish Council	1
Wessex Model Flying Club	1
Western Air Thruxton	1
Wiltshire Air Ambulance	1

Table 2 – Stakeholder Engagement Summary

Ref	Respondent	Respondent Main Points / Concerns	Assessment of Main Points/ Concerns
Email Responses			
E1	British Hang-gliding and Power Gliding association	Message passed on to members	Nil
E2	Wiltshire Air Ambulance	Uninterrupted Access	Letter of Agreement - WAA allowed to depart through TDA at own discretion and use "see and avoid".
		Airspace access procedure	
		Simultaneous Use of TDA	
E3	Keevil Parish Council	Noise Pollution	Assurance on using authorised HGV routes for large vehicles. Smaller vehicle transit times staggered throughout the day to avoid causing congestion.
		Vehicle Congestion	Ground Engine Runs to familiarise animals with aircraft noise.
		Night Ops	Nil Night Operations
		Replied with support for the TDA and WK Activity	Open Day
E4	Wessex Model Flying Club	Loss of airspace	Letter of Agreement - Agreement is being sought to allow the Model Flying Association to operate whilst WK is outside of the TDA, despite TDA active
		Use of airfield surfaces	
E5	Robin-Gp	Loss of airspace	DACS provided by BDN. Multiple contact info on NOTAM
			Minimise TDA activation period
		Lack of LARS coverage	Sufficient LARS cover exists in area
E6	Army Gliding Club (Wyvern)	Airspace access procedure	DACS provided by BDN. Multiple contact info on NOTAM
		Future Plans	Minimise TDA activation period
		Controlling Authority	
E7	British Gliding Association	Loss of Airspace	DACS provided by BDN. Multiple contact info on NOTAM
		MAC	Minimise TDA activation period. NOTAM submission
		Size of TDA	Explanation provided for requirement of 2.5NM 3500ft TDA
		DA Engagement Procedure	Use of Multiple Runways required
		TDA Activation	Inform of TDA engagement procedure
		Local Agreement with Bannerdown	
E8	Friends of Steeple Aschton	Replied with support for the TDA and WK Activity	Nil
E9	Avon Gliding Club	Loss of Airspace	DACS provided by BDN. Multiple contact info on NOTAM
		Airspace access procedures	Contact number for WK OPS
		Questions decision on selection of Keevil	Info provided in ACP
		Size of TDA	Explanation provided for requirement of 2.5NM 3500ft TDA
		MAC	
E10	Army Flying Association	Not to affect	Nil

Form Responses			
F1	Royal Air Force Gliding and Soaring Association	Redacted due to being a military respondent	
F2	SPTA AIR OPS	Increase in telephone inquiries to Responant	DACS provided by BDN. Multiple contact info on NOTAM
F3	Anonymous Helicoter Pilot	Airspace access procedures	DACS provided by BDN. Multiple contact info on NOTAM
		TDA Activation	Minimise TDA activation period
F4	Anonymous Helicoter Pilot	Airspace access procedures	DACS provided by BDN. Multiple contact info on NOTAM
F5	Anonymous Local Resident (Helicopter access)	Airspace access procedures	Contact number for WK OPS
		Loss of Airspace	DACS provided by BDN. Multiple contact info on NOTAM
F6	RNAS Yeovilton	Redacted due to being a military respondant	
F7	Anonymous Local Resident (Helicopter access)	Airspace access procedures	Contact number for WK OPS
		Loss of Airspace	DACS provided by BDN. Multiple contact info on NOTAM
F8	British Baloon and Airship Club	Nil	Nil
F9	Anonymous Pilot	Airspace access procedures	DACS provided by BDN. Multiple contact info on NOTAM
		TDA Activation	
F10	Anonymous Pilot	Loss of Airspace	DACS provided by BDN. Multiple contact info on NOTAM
		Questions descision on selection of Keevil	Info provided in ACP
F11	Anonymous Pilot	Nil	Nil
F12	Anonymous Pilot	Provision of downloadable chart update	Airspace design can be found on Portal and published in AIC

Table 3 – Raw Online Form Responses

ID	Start time	Completion time	Contact	Are you contacting us as a:	What is your biggest concern, if any, about this proposal?	Would our airspace proposal negatively impact you? If so, how, and what changes would you suggest?	If you are a pilot do you usually operate with an airband radio? If yes, who do you routinely speak or listen to when operating around Keevil?	If you are a pilot, how frequently do you operate within the boundaries of the proposed TDA?	Are there any other factors that you would like us to consider?
F1	7/2/20 10:07:07	7/2/20 10:18:53	Redacted due to Military user						
F2	7/7/20 9:47:40	7/7/20 9:55:49	anonymous	SPTA Air Ops;	I foresee an increase in radio calls or telephone enquires to my Ops Staff with regards to permission to fly through the TDA as the general public will associate the TDA with SPTA. This is not insurmountable but SPTA Ops will not be in a position to offer a DACS through the TDA as responsibility will lie with Boscombe Down ATC.	The proposal will not have a negative impact and will just be a case of local users getting used to the TDA. NOTAM needs to specifically detail Boscombe ATC as being the authority for the TDA.			
F3	7/14/20 23:22:19	7/14/20 23:31:18	anonymous	Helicopter pilot;	Access to 2 x private sites inside TDA.	An email POC to approve access-within 24hrs.	Safety com	1-2/month	Only make active when need to. Too many excessive drone NOTAMS that are invariably inactive. Do you really need more radius than a Hercules? Surely you can keep within current ATZ with small air bridge to Salisbury Plain. If you need such big margins then you need to ask yourself if you have full control of these things.
F4	7/15/20 5:03:56	7/15/20 5:06:00	anonymous	Helicopter pilot;	I access this area as a PLS	Allowing access to helicopter	Boscombe or Brize Norton	Frequently	
F5	7/15/20 9:05:20	7/15/20 9:13:55	anonymous	Local Resident;	We need method to fly helicopter in and out of our property with complete access, no limitations. We use helicopter for personal lives including medical appointments.	Yes, if you were to deny and/or limit airspace. We use helicopter for personal use including medical appointments.	I am not the pilot but, yes, our pilot does use airband radio and does speak and listen when operating everywhere! As pax, we call all traffic upon sighting. So, yes to observing safety around Keevil.		Please consider the remoteness of the area and the need for quick transport at times. I don't believe we abuse the airspace, perhaps using 3-8 times a year, but when needed, it's needed.
F6	7/14/20 10:16:57	7/15/20 9:41:30	anonymous	Redacted due to Military user					
F7	7/15/20 20:31:52	7/15/20 20:34:13	anonymous	Local Resident;	We frequently use a helicopter	Yes would restrict the use of a helicopter	Na		Clear for helicopter and a blanket no access is not acceptable
F8	7/27/20 14:31:38	7/27/20 14:35:46	anonymous	British Balloon & Airship Club;	None	No	Yes. Brize Radar	very rarely.	Balloons tend to operate outside the hours of operation of the TDA so there is no perceived threat from this proposal

F9	7/28/20 9:33:43	7/28/20 12:45:45	anonymous	Fixed-wing pilot;Helicopter pilot;	That the TDA will remain active for weeks despite no drone activity taking place. Should this be managed correctly, I see no reason why our club will not be able to transit over the TDA, or request a DACS whilst active. This will make for good training raise awareness for our GA pilots who wont routinely transit SPTA.	No, as long as the TDA is not permanently kept active regardless of Drone activity.	Yes, BDN Zone, monitoring Keevil Radio.	Rarely. As per the advisory notice on the charts, I deliberately avoid following the railway within the Keevil Drop Zone. I do on occasion overfly the airfield, but can climb above the TDA should I require.	Will the Air Ground Radio be manned during Drone operations from Keevil?
F10	7/29/20 14:30:55	7/29/20 14:40:17	anonymous	Fixed-wing pilot;	With the large gliding area around Keevil, this closure is just another added complication routing west north of the danger areas.	see above	I would 'listen in' to Bristol.	variable,	Why could the UAS not be flown within the Salisbury Plain danger areas at all times?
F11	7/29/20 16:53:40	7/29/20 16:54:48	anonymous	Fixed-wing pilot;Helicopter pilot;	None	No	Yes, SPTA, Wallop Approach	Once or twice a month	No
F12	7/30/20 12:32:40	7/30/20 12:36:29	anonymous	Fixed-wing pilot;	I have no concern	No negative impact	London information	Twice a year - just sightseeing the chalk horses, so can easily avoid	Maybe issue a downloadable pdf update chart while waiting for it to appear on the next issue chart.

Figure 1 – Feedback Analysis