

Written evidence submitted by Mr David C

My Role

1. Between July 2020 and July 2022, I was the Watchkeeper Remotely Piloted Air System (RPAS) In-Service Capability Manager within the Joint Helicopter Command (JHC).
2. My role was to manage the capability to upkeep and upgrade the equipment to deliver the defense tasks for Watchkeeper. It involved daily contact directly with DE&S and therefore I feel credible to comment and respond to the call for evidence.
3. It quickly became apparent that Watchkeeper RPAS was a failing program in which a catalogue of errors had led to a Capability that was not delivering for Defence but was costing the taxpayer billions. Watchkeeper RPAS seemed to be the only defence programme that was in three states simultaneously; Still being delivered, In-service and awaiting a midlife upgrade. I will use this letter to outline my perspective on how this programme reached a failed state.
4. The words and opinions below are my own and do not represent any official position. I will be using data that was relevant between 2020 and 2022 which will give an insight into the issues. This data may be superseded by more current data. I no longer work in the Watchkeeper Capability Manager role, should you request more current evidence please email my successor on JHC-CapMan-ISCM-Mailbox@mod.gov.uk.

Watchkeeper RPAS Context

5. Annex A sets out the Background context for Watchkeeper RPAS. It outlines the Capability and the Procurement history.

Watchkeeper Procurement

6. Watchkeeper RPAS Full Operational Capability (FOC) was declared on 30 Nov 2018¹. The fundamental problem were:
 - a. The Watchkeeper system is defined by 265 User Requirements, eleven of which are Key User Requirements. Linked to these are 1910, System Requirements through which DE&S should have demonstrated System Capability to the Army. Requirements through which the supplier has demonstrated system compliance to DE&S. As at 30 Nov 18, only 1² of the 11 Key User Requirement and 40% of the 1910 System requirements had been achieved:

URD	Key User Requirement	RAGY Status
134	WATCHKEEPER shall have at least a 95% probability of detecting all 5 of 5 static NATO standard tank targets within an open area of 4 km2 in no more than 8 minutes.	RED
272	In support of unit operations WATCHKEEPER shall have at least a 95% probability of identifying all 5 of 5 static NATO standard tank targets within a 4 km2 area within 30 minutes of receipt of tasking.	AMBER
	WATCHKEEPER shall provide imagery and IMINT concurrently	

¹ 20181128-WK_FOC2_Acceptance_Note-Sp_integ_SRO_WK_B-OS

² 20171025-WK_FOC1_Acceptance (DRAFT) - WATCHKEEPER ACCEPTANCE (WK) – FULL OPERATING CAPABILITY 2 (FOC 2)

	to at least 8 HQs comprising a total of at least 10 Tasking Users throughout the battlespaces of 2 disparate operational theatres.	GREEN
8	WATCHKEEPER shall satisfy its tasking, world-wide, day and night, under climatic conditions A2, A3, B1, B2, B3, C0 and C1 as defined in Def Stan 00-35 and Def Stan 00-970.	YELLOW
9	WATCHKEEPER shall satisfy its tasking, world-wide, day and night, on surface targets located at up to 4000m altitude AMSL ISA.	RED
25	WATCHKEEPER shall be transportable by two A400M to support theatre entry force operations for one BFM.	RED
31	WATCHKEEPER shall not constrain the tactical mobility of its Users.	RED
158	WATCHKEEPER shall satisfy its tasking for 24 hours per day for a period of at least 14 days with an Operational Availability of at least 85%.	RED
485	WATCHKEEPER shall enable training for Warfighting Operations.	RED
470	WATCHKEEPER shall exchange data with BOWMAN and dependent BISAs and facilitate J2/J3/J5 user access to WATCHKEEPER I2 across the UK core network.	RED
185	WATCHKEEPER shall provide the location of static targets to within an absolute targeting error not exceeding 10 m in the horizontal circular error (at 90% confidence levels).	RED

Colour	Acceptance Definition
Red	Not accepted
Amber	Partially accepted - limitation with kit
Green	Accepted
Yellow	Partially accepted - insufficient evidence

Table 1: WK KUR ACCEPTANCE STATUS

b. It was accepted with the known issue that WK ES2 capability does not yet have a full logistic and deployable infrastructure package and until one can be developed, WK will be limited to operation from mature infrastructures. Any deployment of WK beyond this will require a bespoke support solution.

7. Fundamentally, by 2018 the procurement of Watchkeeper had already taken 9 years of development and couldn't deliver the primary functional capability that Defence required. I cannot explain why the MOD accepted this as Fully Operationally Capable.

8. **Watchkeeper - still being delivered.** As a consequence of so many outstanding User requirements and System Requirements a Trials and Evaluation unit has been maintained by THALES at West Wales Airport ever since. By Sept 2021, the 10 Key User Requirements remained undelivered, and the breakdown of System requirements was:

Fully Accepted	908	48%
Not Accepted	90	5%
Partially Accepted	505	26%
More Evidence Required	78	4%

Deleted	158	8%
Fully Traded	171	9%
Total	1910	

Table 2: WK SR acceptance status sept 21³**Watchkeeper in service.**

9. Watchkeeper was procured as a response to the MOD second order assumption (2OA) that it required a persistent drone capability to deliver up to 6000 ISTAR flying hours per annum. The WK single statement of User Requirement (SSUN)⁴ is: "To provide accurate, timely and high quality imagery and IMINT, collected, collated, exploited and disseminated primarily to satisfy the land manoeuvre commanders' critical information and intelligence requirements within the context of Joint Operations, throughout a range of environments and across the spectrum of conflict."

10. In FY 21/22 It was measured that the output of Watchkeeper program as 1x Training UOA⁵ + 1 x Non enduring UOA delivering 3 EA⁶s per week with an average Sortie length of 3.5 hrs. Quantitatively this equates to a measured monthly output of 35 - 40 flying hours from 15 - 20 sorties per month⁷. This represents <450 Flying hours per annum, far less than the 6000 required.

11. A capability maturity plan was written to grow the capability to 4000 hrs per annum by 2027. Watchkeeper has missed every target on this maturity plan since its conception in Nov 2021.

12. Since FOC declaration until Nov 21, Watchkeeper⁸ has achieved 804 flying hours from 271 Sorties.

- a. 612 flying hours have been delivered at RAF Akrotiri delivering Pilot Training.
- b. 121 flying hours on UK based training exercises.
- c. 70 flying hours on UK based Operations (Op DEVERAN , Oct 2020)
- d. 0 flying hours on Overseas based Operations⁹.

13. Since 01 Nov 21, Watchkeeper has achieved a further 371 hrs.

14. At a rate of 6000hrs per annum the MOD would have expected the Watchkeeper drone to have delivered ~ 18000 hrs between FOC in Nov 2018 and Nov 22. In reality the Watchkeeper programme has delivered only 1191 hrs over this time period. Representing 6.6% of the desired output.

15. If the watchkeeper cannot fly then the pilots cannot train. If the pilots cannot train, they cannot prove the base capability and develop and integrate it further. Without proving its capability, Watchkeeper is not trusted as a reliable capability by the MOD.

³ 20210914-0849-SRD_RVVM_Export-TSv17-UKOS-UKR

⁴ 20190927-WK_Fielding_Plan_V3.2

⁵ UOA – Unit of Action, all the components required to deliver 1 Task Line (TL).

⁶ EA – Effects Aircraft.

⁷ The conservative estimate was for 480 Flying hours per annum output. In FY 21/22 the actual measured output was: 407 Hrs.

⁸ This data is for the Forward Fleet. It does not include data flown during Trials and Evaluation.

⁹ Op HERRICK was with H450 not Watchkeeper.

16. **Why the low flying rate?** Fundamentally, as DE&S did not deliver the capability required from Watchkeeper, it could not be operated effectively by the users. 47 Regiment Royal Artillery (47 RA) are the only MOD unit to operate the watchkeeper. They were placed in an unwinnable position:

- a. There was only enough sustainment (logistics, spares, aircraft maintainers) to maintain a small forward fleet. Therefore only 13 from 54 aircraft were in the forward fleet. The remainder of the useable fleet were in storage.
- b. As the aircraft capability was not delivered as planned, it had a lot of restrictions on its flight envelope. This was further restricted after several crashes. The RTS (Release to Service document) severely limits the watchkeepers ability to fly in the UK. This is due to three requirements:
 - (1) Limitations on flying over populated areas.
 - (2) Limitations on flying in congested airspace.
 - (3) Limitations on flying in poor weather.

As a consequence, the Watchkeeper capability could not be trained in the UK and a permanent overseas flying location was required.

- c. 7 notable incidents have resulted in vast periods where the Watchkeeper Capability was grounded and not available for the users to train on.
- d. RAF Akrotiri was allocated by the MOD for Watchkeeper to use as a permeant overseas training location. RAF Akrotiri is the busiest¹⁰ MOD Airfield outside the UK. Watchkeeper was considered a low priority user and could not operate while other aircraft where in the airspace. As a result, Watchkeeper was limited to only fly Monday – Thursday, at night, for a 6 hour flying window. Therefore the pilots couldn't train the 16hr endurance capability of the aircraft.
- e. As of 2022, 47 Regt Royal Artillery have trained fewer than 20 Pilots and are now looking for an alternate flying location in the USA. 47 RA are struggling to 'train' pilots to fly the aircraft, let alone learnt to 'fight' it and provide ISR services to the wider MOD.
- f. Each watchkeeper in training requires 2 pilots and an instructor. As a consequence of all the constraints placed on 47 RA, they have never been able to fly 2 watchkeeper aircraft simultaneously. Nor have they been able to fly more that 2 sorties from 1 location in a single day. 47 RA have never once proven the endurance of the Aircraft to fly 16 hours in a single sortie.
- g. Despite FOC being delivered on paper in Nov 2018. 47 Regt Royal Artillery have never proven that they can deliver this capability. It is doubtful that they could deliver 15% of the capability defined in the FOC definition statement.

17. **Watchkeeper Mid life Extension.** Due to obsolescence with the hardware and security concerns regarding the operating system (it runs on Windows XP) the watchkeeper is about to undergo a Mid Life Extension. This will not improve the capability in anyway, it will only increase the likelihood of being able to satisfy the initial KURs. The Midlife extension will

¹⁰ As a result of Op SHADER, OP FORTIS and other RAF requirements.

cost the MOD ~£225M, not deliver any improved capability to the user and will only compensate for errors in the initial procurement.

18. To add insult to injury, further obsolescence is forecast. This Midlife extension will only extend the service life to 2033, however Watchkeeper currently has an out of service date of 2042, so a further Midlife Extension will be required as an estimated cost of ~£200M

19. **Watchkeeper finances and value for money for the taxpayer.** There is no conceivable way that the watchkeeper program can be considered a return on investment, let alone a value for money. It has a contracted cost of ~£86.7K per day regardless of output. As watchkeeper has a very low fly rate, the cost per flying hour fluctuates but has been estimated at £88.4K. To put this in perspective, the operating cost¹¹ of Watchkeeper is estimated to be about £8k per flying hour. So, the difference is purely due to inefficiency and waste in the programme.

20. The watchkeeper programme will end up costing the taxpayer between £2.5Bn and £3Bn. About £1.5bn has been sunk or is committed already, yet watchkeeper capability has not yet proven that it could meet the FOC definition and does not deliver on the ISTAR capability gap it was procured for.

21. Further funding of Watchkeeper is throwing good money after bad. The Programmes foundations are so weak that the majority of committed funds goes to fixing programme problems rather than growing the capability.

22. The Watchkeeper asset price is not excessive at ~£10.5M (~£5.3M per unit + ~£5M for the ground control station) however this must be placed in the context that this is for a capability that doesn't currently deliver for the MOD and if it delivers it will be at 2007 technology levels. Comparisons of Baykar Bayraktar TB2 (Asset cost ~£6m per unit) or the RAF Protector Drone (~£15M per unit¹²). Demonstrate far better return on investment. This is modern technology that is already delivering a greater capability for comparable or cheaper cost.

23. **DE&S.** DE&S were the procurement agent and although I cannot comment on their procurement, I have demonstrated the consequences of procuring a capability that cannot currently deliver. I was part of the in-service capability team and interacted with the DE&S RPAS Delivery Team daily. Here are some of my observations:

a. **Sole provider.** The Watchkeeper programme is exclusively procured from THALES. Not only do THALES produce the capability, but they also provide the logistic package and have set up a company called UTacS to provide additional Maintenance support. Thales have a monopoly on all contracts, and they know they will get all future contracts. DE&S do not hold them to account to provide reasonable quote for any service and there is no realistic market tender program. THALES have no incentive to provide a reliable air vehicle because if it is unreliable, they get contracted to provide the spares, maintenance, technical diagnosis etc. It's in their interest for watchkeeper to be failing. An example of this is that they are getting the £225M Mid Life Extension programme to deliver a specification that they should have delivered during the original procurement. This is simply money in their pocket and DE&S are enabling this rather than achieving value for the taxpayer.

¹¹ Maintenance, logistics, fuel, runway costs, pilot costs etc.

¹² [RAF Signs £195m Deal For Remaining 13 'Cutting-Edge' Protector Drones \(forces.net\)](#)

b. **Focus on getting on contract rather than the right contract.** Several times I noticed their desire to tick boxes and get things on contract even if the contract was poor. This was driven by the toxic leader, who just never wanted to be seen as underperforming (maybe there was a lack of psychological safety). An example of this poor contract management was a maintenance contract with UTACs required renewing. This was during a period of time where Watchkeeper was exclusively flying in Cyprus and not in the UK. The current contract did not include overseas deployment and would constrain maintenance to only the UK. When I pointed this out to the contract manager, he informed me that it was too difficult to rewrite the contract this year and it was more important to get them on contract. This resulted in 8 contractors who could not deploy overseas within the contract and so Equipment that needed maintenance was shipped back to the UK for repair just to be sent back out to Cyprus. This issue resulted in hundreds of thousands in additional logistic and maintenance costs. This was only fixed when I galvanized focus from his team on the constraints that this contract provided, the in-contract amendment cost was close to £50k¹³. additionally, the UTACs charged ~£18kpcm to self-organize accommodation in Cyprus for their two deployed technicians. DE&S never held them to account over this excessive pricing.

c. **Under resourced.** Throughout my two years working with the DE&S RPAS Delivery Team they constantly had a reduced workforce. It was apparent that the personnel knew how toxic the manager was and that the Watchkeeper was a failing programme. It therefore didn't attract the talent it required to turn it around. It was under resourced, and this placed additional pressure on remaining team members, several of whom took extended periods of medical leave due to stress at work. (This included the toxic team leader).

d. **Not being held to account.** The DE&S RPAS Delivery Team worked in isolation from the DE&S RPAS Programme team. The programme team were still delivering the initial procurement of the programme but had constantly been extended, year on year while the Trials and Development were still ongoing. Since FOC in Nov 2018 the DE&S RPAS Delivery Team were stood up to deliver in-service capability (like in all programmes). However, as the capability delivered was so poor, the DE&S RPAS Delivery Team refused to be held to account for its performance and always blamed the procurement. In their quarterly performance meetings with JHC, they refused to consider being held to account for the low flying rates, difficulty in acquiring equipment, poor logistics and general underperformance. The general problem was that the Delivery Team and the Program Team were adversarial, and this limited collaboration and progression. The Delivery Team just passed the buck and constantly blamed the underperformance of the Programme team.

24. **Conclusion.** By the time I worked with DE&S on the Watchkeeper program, it was clear that foundations of the programme were so porous, and the capability was so poor that there was little hope in delivering on Capability expectations for the MOD. Therefore, over time, expectations were reduced and the general feeling of most people involved from DE&S (and reflected in JHC) was that we were all nursing the watchkeeper to a slow death. We all expected the capability to be cut in the Integrated Review 2021, however we were all shocked when it wasn't.

25. This is a programme that doesn't currently benefit Defence in any guise and is a drain on resources. Its will not prove that it can deliver the Full Operational capability this decade¹⁴

¹³ UAS/00096 – TAF 056

¹⁴ Nor do I expect it will achieve more than 1500 flying hours per annum.

and therefore continual funding does not represent value for the taxpayer. The accountability for the under delivery of this capability should solely sit with DE&S as they are the procurement agent for the MOD and have severely undelivered.

26. This programme needs more scrutiny from UK Gov and the Defence Sub Committee.

End.

Annex A – Watchkeeper Capability and Procurement History

Annex A - Watchkeeper Capability and Procumbent History

1. WK is a Category A capability programme sponsored by Joint Force Command (JFC) and being delivered by Army HQ as the lead command. It is a Defence Major Programmes Portfolio (DMPP) and Government Major Projects Portfolio (GMPP) programme and is subject to scrutiny by DCDS Military Capability and Cabinet Office Infrastructure and Projects Authority assurance respectively. It is supported by a Programme Main Gate Business Case (2005) and subsequent Review Note (2014) which represented the re-baselining of the WK Programme.

2. **Capability Context.** Watchkeeper RPAS was designed to deliver the following Capability:

a. The Watchkeeper System is an Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) capability that has been procured to provide Imagery Intelligence (IMINT) to Land Commanders. The Watchkeeper System is a replacement for the retired Phoenix, Remotely Piloted Air System (RPAS). As an interim capability, until the introduction of Watchkeeper, the Hermes 450 (H450) System was procured under an Urgent Operational Requirement. Compared with the Phoenix or Hermes 450 Systems, the Watchkeeper Remotely Piloted Aircraft has enhanced performance, range and improved capability, with Synthetic Aperture Radar / Ground Moving Target Indicator and Electro-Optical / Infra-Red payloads, as well as a Laser Sub System, to support Commander's Information Requirements and Fire Support operations.

b. The Watchkeeper System comprises a ground and air element which provides the ISTAR capability for the British Army. The project is managed by the Defence Equipment & Support (DE&S) RPAS Delivery Team (RPAS DT). The Prime Contractor and System Design Organisation (DO) is Thales UK, and the UA DO is Elbit Systems Limited of Israel (formerly Silver Arrow).

c. **Primary Roles:**

(1) Watchkeeper contributes to satisfying Divisional, Brigade and Battle Group Commander's Information Requirements.

d. **Secondary Roles:**

(1) Watchkeeper provides real time laser target marking and designation in support of other systems such as artillery, Close Air Support and Apache helicopter.

(2) Military Aid to the Civil Authorities.

e. **In the following environments:**

(1) UK and deployed locations between 65° S and 65° N, from land, in support of objectives as required by His Majesty's Government.

(2) Deployed operationally and conducting non-embarked operations.

3. **Watchkeeper System Definition.** The Watchkeeper system is defined in terms of User Requirements detailed in Watchkeeper User Requirements Document - Amended URD 6.0 Part 3 Final V6.0, dated March 2005, System Requirements detailed in Watchkeeper System Requirements Document - SRD 3.0 Part 3 Final, dated July 2005, and Technical

Specification requirements detailed in TUAV/00026 Annex E Technical Specification, 103-017817, Issue 15, dated March 2018.

4. The Watchkeeper system is defined by 265 User Requirements, 11 of which are Key User Requirements. Linked to these are 1910 System Requirements.

5. Current Operating Context.

- a. Watchkeeper cannot fly in UK airspace.
- b. In 2014, H450 deployed to Afghanistan for two months and delivered 144 hours from 27 Sorties.
- c. Since 2018 Watchkeeper Force deployed the capability to RAF Akrotiri in Cyprus to focus on pilot development.
- d. In 2020, Watchkeeper deployed 4 platforms on OP DEVRAN to help prevent migrant crossings in the English Channel. In the 3-month deployment, watchkeeper delivered 22 sorties and 70 hours of flying.
- e. Since 2022, Watchkeeper has established another Flying location in the USA.

6. Procurement history.

- a. Initial order for the Watchkeeper RPAS System was placed on 15 July 2007 for initial delivery of 54 Watchkeeper platforms in 2010.
- b. Watchkeeper achieved Initial Operating Capability (IOC) in November 2014.
- c. Formal acceptance of the Watchkeeper (WK) Tactical Unmanned Air System (TUAS) at Full Operating Capability 2 (FOC2), was achieved in November 2018. FOC 2 is defined as: "A Battery of 3 x WK TLs¹⁵ @ Readiness (90 days NTM), at Equipment Standard 2 (ES2) build standard, to support an enduring stabilisation operation, worldwide and across a limited spectrum of natural and environmental conditions."

7. Asset Numbers.

- a. 54 Air Vehicles were procured.
- b. Due to incidence in trials and training, 7 are considered Beyond Economical Repair (BER) or are missing¹⁶.
- c. 1 is on loan to THALES to continue development.
- d. 46 remain in the Departmental fleet. Of which 13 are in the forward fleet and the remaining 30 are in Storge and 3 are in the Trials and Development fleet at West Wales Airport.

8. **Finances.** In November 2021 I was asked to respond to a PARLIAMENTARY QUESTION PQW/21-22/2021/13393 asking about the whole life cost of the Watchkeeper

¹⁵ A Task Line is defined as a single mission conducted within 1 x take off and landing cycle of no more than 14hrs duration.

¹⁶ Sunk into sea in Ceredigion bay.

RPAS System and the Cost per flying hour. These are a conservative number and only likely to increase.

9. Watchkeeper Whole Life Cost estimate: £2.457 Bn

a. Sunk Costs (as at 31 oct 21): £1.173 Bn

- (1) Development, Manufacture and Initial Support contract: £909.146 M.
- (2) In-Service Support to date: £249.369 M¹⁷.
- (3) Full Mission Simulator to date: £14.085 M.

b. Anticipated Costs: ROM £0.250 Bn

- (1) Mid Life Extension Programme 1: ROM £225 M¹⁸.
- (2) Spares Inventory + 2 x Deployable Spares Packs: ROM £16.5 M.
- (3) Contracted Maintenance Support: £ 8.108 M.

c. Future Costs. VROM £0.899 Bn

- (1) Future In-Service Support Contract: VROM £630¹⁹M.
- (2) Mid Life Extension Programme 2²⁰: VROM £200 M.
- (3) Contracted Maintenance Support: VROM £54²¹M.
- (4) Decommissioning and Disposal: VROM £15 M

10. Costs Per Flying Hour: £ 88,456.

a. Sunk cost of current In-Service Support Contract (01 April 19 – 31 Oct 21): £78.372M.

b. Flying hours delivered: 886 hrs from 311 Sorties.²²

End.

8th March 2023

¹⁷ Current ISS Contract Costs £158.3 M over 5 years and terminates on 31 Mar 2024. Cost per day is £86.7K.

¹⁸ Delivering FOC in FY 26/27 and will extend WK programme life until 2033.

¹⁹ Watchkeeper Out of Service date: 31 Mar 2042. Assume ROM £35 M p.a. support costs.

²⁰ Required to extend Watchkeepers capability from 2033 until its Out of Service date in 2042.

²¹ Assume ROM £3 M p.a.

²² Flying hours planned: 2608 hrs from 697 Sorties.