Bristow
Search and Rescue

English Channel - Enhanced Situational Awareness

Bristow Proposal

Version: 4.0 Final

26 November 2021

Bristow Solution Philosophy

- Based on our experience of UAS PS over the past 2 years, and our Partner 2Excel's experience at currently delivering fixed wing Channel surveillance; we believe a blended solution of UAS and fixed wing aircraft is ideal for enhanced situational awareness of migrant activity in the English Channel.
- Our proposal has UAS at its core, initially deploying the technologically and operationally proven Schiebel S-100 Camcopter®. This could be replaced as the programme matures by a fixed-wing long-endurance UAS, such as the Robot Aviation FX450.
- Underpinning our UAS offerings will be a manned fixed wing capability, provided by our fixed wing partner 2Excel, fully resourced with additional assets and independent of their current ASv contract.
- In anticipation of a doubling of activity in the Channel, our solution proposes a core 2000 hour annual flying provision adjusted depending upon seasonal peaks and troughs. With the ability to increase beyond 2000 hours in Phase 2 and beyond with the potential to adjust the balance of flying as UAS operations become less restrictive.

Requirement Assumption Overview

- Significant increase in migrant traffic within the English Channel; intelligence and weather based assessments of activity levels becoming less reliable metrics in predicting crossing attempts.
- HMCG lack situational awareness due to paucity of air assets and conflicting priority tasking.
- MCA require dedicated enhanced situational awareness capability to enable effective management by JRCC in supporting SOLAS obligations.
- **Urgent requirement** – build capability ASAP, to relieve the pressure on current assets and to understand the full scale and scope of the problem.
- Two Phase solution; Phase 1 commencing ASAP, Phase 2 by May 2022. Demand may ease through the Winter months but exponential increase expected next summer - Phase 2 uplift must provide a complete, enduring solution with an end of Apr 22 target date.
- Situational awareness service provision must be resilient with a high availability rate and strength in depth
- Capability demand largely unpredictable – service must offer appropriate levels of coverage and persistence, with the capacity to react and surge.
- Service must integrate and interact with MCA stakeholders and OGDs safely and effectively.
- Procurement route is direct through CCN within UKSAR(H).
- Any additional manned FW provision must be independent of 2EA ASV service provision.

Requirement Analysis

Primary Sensor - EO/IR camera e.g. MX10:

- Detect targets at 20Km (max distance from edge of available airspace to existing areas of interest).
- Recognise at 10Km (at 8 Km from Int'l boundary).
- Identify at no less than 6 Km (at 2Km from Int'l boundary).

Alternate Sensor:

- Any available alternate sensor which can rapidly detect targets of interest over a wider area, and at greater range or speed than that of an EO/IR system e.g. PT8 Day/Night Oceanwatch
- Any available sensor to improve ability to 'look through' bad weather e.g. Pico SAR.
- AIS essential to discount commercial or enforcement vessels.

C4 ISR

- Offboard data links to be capable of open channel architecture to connect with HMCG.
- Command and control of platform requires licencing (both crewed and un-crewed).
- Communication to interdiction vessels required (On-Scene Commander).

Long endurance air platform; crewed or un-crewed; integrated and connected twin sensor fit, suited to ambient environmental and meteorological conditions. Platform should be able to cross-cue from electronic detection system to optical, to enable confirmation of target, transmission of imagery, and delivery of SA.

Assumptions

- Lydd is available as main operating base.
- UAS Airspace Approvals granted by the CAA, with MCA sponsorship (not required for the fixed wing service)
- If required, additional platforms and sensors can be delivered to meet Phase 1 and Phase 2 timelines.
- Near real-time data transmission and information sharing connectivity in place.
- MSC is acceptable CAPEX funding mechanism for platforms & sensor provision.
- Core flying hour provision is capped at 2000 hours at a fixed flying hour rate (FHR) – delivered through a mix of UAS and Manned FW.
- Operational flying hour provision above agreed activity levels will be charged at an enhanced FHR.
- Bristow's partnership with 2Excel will deliver Manned FW capability co-located at Lydd

Activity Levels

- BHL understanding that 2EA support to Channel task is routinely the provision of 8 hrs of support (2 back to back sorties)

Annual Flying Hours	Daily Coverage (hours)/365	Days covered based on minimum of 8 hours/day	Days covered based on minimum of 12 hours/day
1500	4.1	187	125
2000	5.5	250	167
2500	6.8	312	208
3000	8.2	>365	250
3500	9.6	>365	292

- To provide full Channel situational awareness (24/7/365) coverage of the Channel requires 8760 hours on task (no transit flying included).
- MCA comparison against Green/Amber/Red day statistics to determine optimum annual flying requirement # hours coverage versus # days covered

Proposed Solution – Phase 1 Dec 21 – Apr 22

- Blended solution based upon UAS potentially augmented by manned FW / RW

Indicative Platform	Indicative Sensor Fit	Estimated Tasking Rate
Schiebel S-100 (FX450)*	PT8 Oceanwatch MX10 Pico SAR AIS	1000 hours annually
Lydd standby aircraft AW189**	Full UKSAR fit	Standby as required to provide up to 4 hours on task
Dedicated P68 capability available from March 2022*** PA31 Navajo (existing 2EA provision)	MX10 (P68) MX15 (Navajo) AIS	1000 hours annually

*Potential introduction of FX450 FW long-endurance UAS for Phase 2 deployment
** Can be crewed to provide additional resilience as UAS capability builds
*** Target operational date for P68

Capability RW UAS

- Able to mobilise with immediate effect – system already redeployed to Lydd
- Proven suite of sensors which can offer search requirements with downlink.
- Not reliant on h24 airfield.
- Crew can be changed in flight without impacting search mission.
- Already has OSC and proven access to airspace.

Schiebel S-100 Camcopter®

Capability FW UAS

- Optimised for long endurance.
- Full suite of sensors and mission systems to match RW and crewed equivalents.
- Less complex than RW.
- Next generation efficiency – fuel and maintenance.
- Reduced environmental impact.
- Immature systems and OEMs but BHL now well placed to select, acquire and exploit.
- Crew change in flight.

Robot Aviation FX450

Proposed Solution – Phase 2 May 22 – May 25

- Blended solution based upon UAS augmented by manned FW

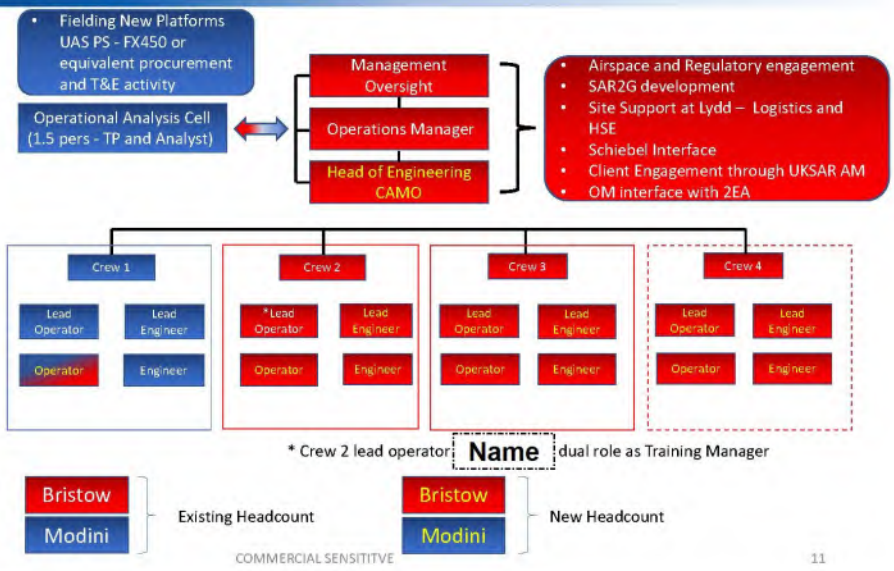
Indicative Platform	Indicative Sensor Fit	Estimated Tasking Rate
Schiebel S-100 FX450	PT8 Oceanwatch MX10 Pico SAR AIS	1000+ hours annually
P68	MX10 AIS	1000 hours annually

- As UAS solution matures and regulatory permissions expand, augmentation by manned FW could reduce and enable later years Phase 2 solution to be predominantly UAS based

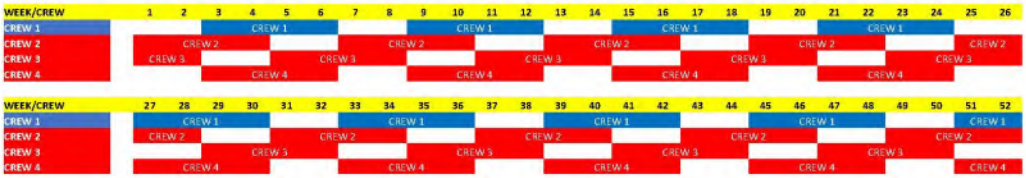
UAS Delivery - Organisational Structure

One Task Line
One standby line

- 1 crew:
  - 2 operators
  - 2 engineers
- 4 crew rotations:
  - 8 operators
  - 8 engineers
- Management
  - Operations Manager
  - Head of Engineering/CAMO
- Management Oversight
  - 24 hour cover as per UKSAR AM/NP provision
- Total resource requirement:
  - 14 pers for one task line
  - 1.5 pers OA support
  - 4 pers dedicated T&E crew



Phase 2 UAS Tasking Provision – 4 crews



- 4 Crew roster - 4 weeks on, 2 weeks off; single pre-planned task line, standby crew/aircraft for unplanned tasking 365 days
- Dedicated UAS PS crew (Crew 1) for T&E fielding of new platforms/sensors
- 12 hour shift, maximum of 8 hours flying per shift followed by minimum of 8 hours uninterrupted rest between duty periods
  - 8 hours of tasking split 4+4 can be back to back or split as required
- 1000 hours annual flying at agreed FHR

Capability Manned FW

- Proven, mature and robust systems.
- 2EA procurement of NPAS aircraft most expeditious and cost-effective route to fielding capability
- Fewer compliance and airspace access challenges vs un-crewed.
- Fewer meteorological limitations vs un-crewed.
- No dependency on ground based infrastructure for C2.

P68 NPAS


2Excel P68
Situational
Awareness
Platform

Response to Bristow request:

In summary, we offer to provide:

- 1000hrs/yr
- 1 'FTL period' per day
- 365 availability
- Utilising two ex-NPAS P68s
  - Negotiation going well
- Additional capability
  - Another 1000hrs/yr
    - Second line of tasking
  - Utilising two additional ex-NPAS P68s

P-68R platform

- 2 Crew
- Cruise 125 KIAS
- Loiter 90 KIAS
- Endurance 5+ hrs
- FIKI certified

These unofficial figures are typical in the current NPAS configuration

Mission System

- AIMs-ISR
- Wescam MX-10 EO/IR
- Airwave radio
- LOS VHF Downlink
  - Compatible with Border Force receiver equipment
- Maritime VHF FM radio

Requires

- AIS
- BLOS comms – DZMx Satphone
- HMCG livery

CONOPS

- Basing tbd; could forward deploy from DSA to LYX when red/amber forecast, or be permanently based at LYX
  - Hangarage tbd
- 1 crew per day (8-10hr shift to cover Op EOS vul)
  - Vul time typically 0100-1000L
  - Blended solution with S100
    - 1-2 sectors per shift
    - 30min tech stop between sectors
- Maintenance options tbd
  - Base and line at DSA
  - Line cover at LYX
- Resilience back-up provided by PA-31 or KA from DSA if required
  - Longer vul times achievable with the blended solution or through contribution from ASv

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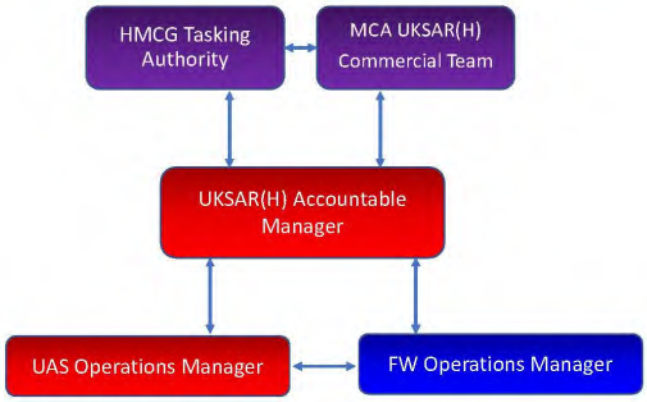
Delivery Organisation



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