Version 1.0

COCKPIT SITUATIONAL AWARENESS TOOL

SYSTEM REQUIREMENT DOCUMENT

HELSS0090

Date 18/10/17

SYSTEM REQUIREMENT DOCUMENT FOR Cockpit Situational Awareness Tool (CSAT)

CONTENTS

PART 1

1 GENERAL DESCRIPTION

1.1 ORIGIN OF THE NEED

There is an operational and training requirement for a long-term mitigation to provide aircrew a wires alerting system (in conjunction with a moving map display) which promotes aircrew situational awareness, both during the planning phase and in-flight, of the risk of wires and vertical obstruction in order to maintain situational awareness.

1.2 OPERATIONAL CONTEXT

1.2.1 The Cockpit Situational Awareness Tool (CSAT) system will deliver vertical obstruction information to the operators during the planning phase of, and when conducting low level (<500ft Above Ground Level (AGL)) helicopter sorties. The system will be used worldwide in both an operational and training environment, during the night (including the use of Night Vision Systems) and day, becoming one facet of Joint Helicopter Commands (JHC) overall risk reduction strategy for low level flying operations, although it will not be a mission Go/No-Go item of equipment. The system is expected to consist of:

- CSAT software
- Panasonic FZ-M1 Tablet
- Tablet mounting cradle (airborne use)
- Base station
- Peripherals for charging and connecting tablets to the base station.

1.2.2 The base station will be used to plan and upload the necessary mapping and mission data for the sortie. The base station will be a standalone system where updates to the system software and data set will be introduced via removable media. The Base Station will be the local master source and updates to the tablet will be via a 'hub' connected to a Base Station. The responsibility for the collation and distribution of those updates to the users will be the responsibility of the contractor, using source information provided by the contractor, Defence Geographic Centre (DGC), No1 Aeronautical Information Document Unit (AIDU) and MOD where applicable.

1.2.3 The airborne element of the system will consist of the tablet from the Panasonic FZ-M1 family and will be carried on a cradle attached to the leg of the user. The airborne element will be a standalone item that requires no connection or interface with the aircraft, with the exception of the Merlin Mk2 platform where the tablet is used to display AIS information to the user. This information is derived from an AIS receiver and connected via a USB connector to the tablet. The detailed aircraft integration and clearance of the AIS function on Merlin Mk2 is not part of this requirement.

1.2.4 The tablet will be charged on the ground only, each with its own docking station, and updated by connection to the base station via cable routed through a 'hub'. When operating in the aircraft the user will refer to the wires and obstruction data displayed on the 2D and 3D real time mapping display, in order to support situational awareness to further supplement eyes out of the cockpit. Imagery loaded onto the tablet and geo-locked to the map will provide additional information such as airfield layout, operational target information, mission data files and exercise mapping, this will be utilised where applicable. During use on the aircraft users will have the facility to mark up the map on the tablet with the location of obstructions not currently held within the database, the system will allow the loading of that data onto other tablets connected to that base station in order to provide an up-to-date local picture. Subsequently this information will be utilised to report the new obstructions to DGC. Reporting to DGC will be via the existing channels external to CSAT, and will not form part of this requirement.

1.2.5 Primarily CSAT is a wires and vertical obstruction advisory system and is not to be used as the primary alerting mechanism or navigation source. The Authoritie's Standard Operating Procedures (SOPs) will detail how crews operate without the CSAT equipment and flying supervisors and /or duty authorisers are to consider and brief the associated increase in risk. SOPs should define actions to follow in the event CSAT fails during flight, or if there is any doubt about the validity of its accuracy.

1.3 SYSTEM BOUNDARY

1.3.1 This requirement is for the procurement of the following components that complete the CSAT system, the detailed specification of each component is to be determined by the contractor to meet the system requirements.

- Contractor bespoke CSAT software
- Panasonic FZ-M1 Tablet
- Tablet mounting cradle (airborne use)
- Base station (laptop)
- Peripherals for charging, updating and connecting tablets to the base station

The system is to be managed as standalone, updates to the base station will be managed and completed via removable media. Transfer of data between the base station and the tablet will be via a hardwired link, possibly via a hub.

1.3.2 Responsibility for the collation of externally sourced data (e.g. DVOF, EFB) will be the responsibility of the contractor. This data will be compiled along with the contractor's software and appropriate anti-virus software onto suitable removable media and distributed for inclusion on the user base stations on at least a 28 day life cycle or in line with DGC/No1 AIDU updates, whichever is sooner.

1.3.3 When used on the aircraft the tablet will be independent of the aircraft systems and will be secured to the operator as carry on equipment. The exception to this is when it will be used on the Merlin Mk2 in the AIS role, a specific Release to Service will be sought to permit this.

1.3.4 The specified user group for this system is UK Military Aircrew.

1.4 SYSTEM CONTEXT

1.4.1 The fundamental dependencies of the CSAT system are:

- The ability to operate using the MOD's stipulated source of GEOINT via DGC and No1 AIDU.
- To operate in a helicopter cockpit and cabin environment without interference with the host platform, or susceptibility of interference from the host.
- Integrate with in-service aircrew clothing and equipment requirements and not negatively impact on crew escape
- To interface with the Merlin Mk2 Avionetic RX-5 AIS receiver to provide an AIS overlay on the map.

1.5 REQUIRED IOC AND FOC DATES

1.5.1 As defined in contract document

1.6 PLANNED OSD

1.6.1 The Out of Service Date (OSD) will be 31 March 23.

1.7 CONSTRAINTS

1.7.1 MOD Policy concerning the source of Geospatial Intelligence (GEOINT) data laid down in JSP 465 states that Defence projects shall use GEOINT supplied and approved by a Specialist Geospatial Centre (SGC), in this environment that will be Defence Geographical Centre (DGC) and No1 Aeronautical Information Document Unit (AIDU).

1.8 PRIORITIES

1.8.1 The priority is to provide a Situational Awareness (SA) tool to support JHC's risk reduction strategy against controlled flight into obstructions during low level flight.

1.9 SYSTEM MODEL

1.9.1 The system is expected to be updated, configured for mission and charged via docking stations connected to a base station and suitable power source. The illustration at Figure 1 shows the anticipated system layout where at least four units can be connected for updates, configuration and/or charging. Independent charging of the tablets will be possible using the docking station independently of the base station.

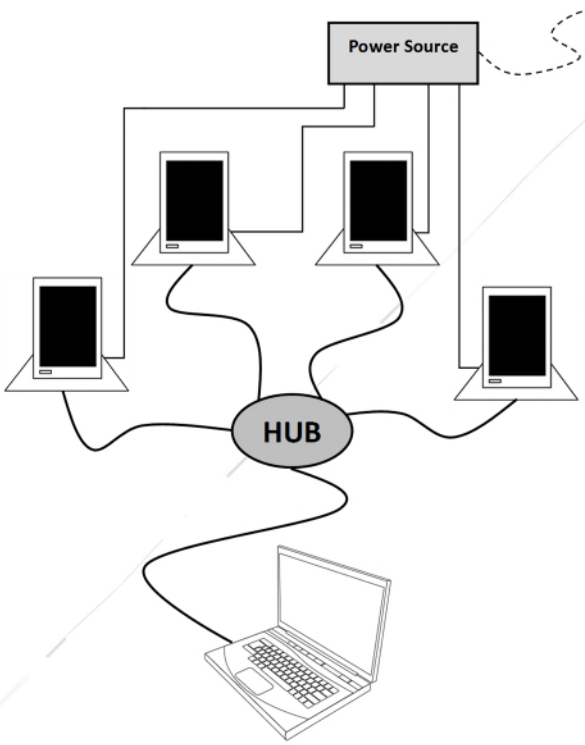

Figure 1 - Anticipated system layout

1.9.2 When used on Merlin Mk2 in the AIS role the tablet is to interface with the connector, Part Number D38999/24WA35SN, on the AIS control panel illustrated in Figure 2.

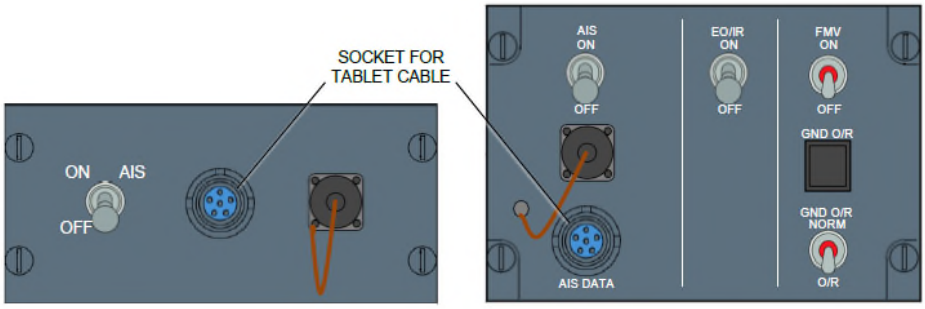

Figure 2 - AIS control panel

1.9.3 The output of the AIS receiver is connected to the tablet via sockets 1 (Tx) and 3 (GND) on the AIS control panel connector as shown in Figure 3.

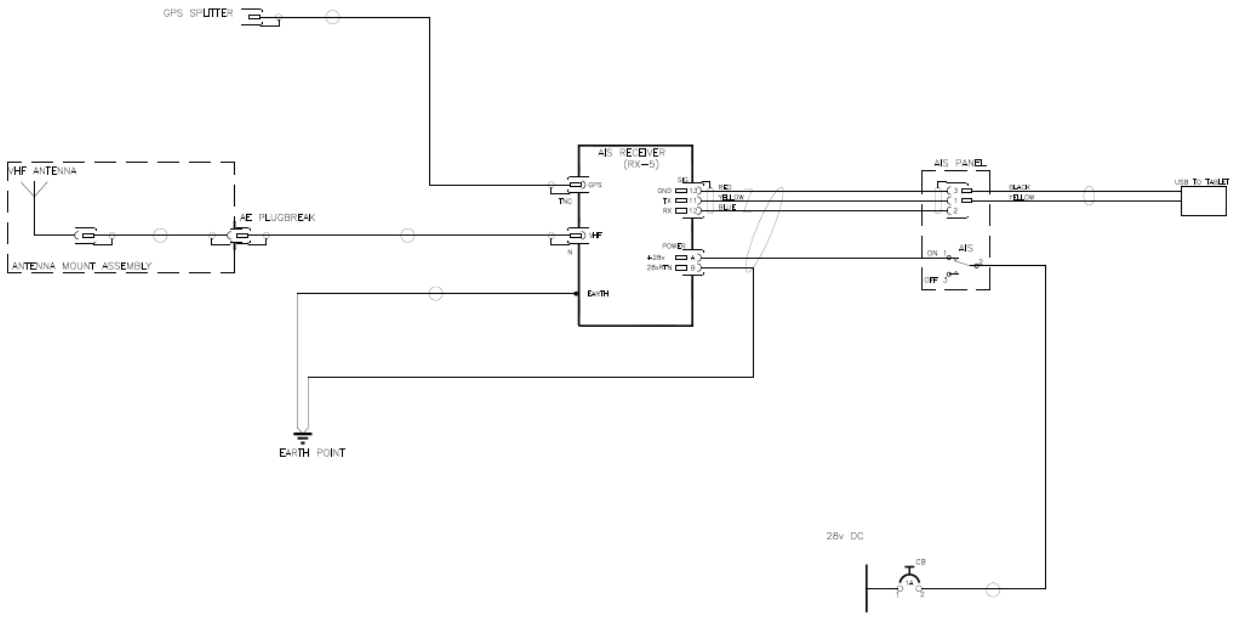

Figure 3 – AIS wiring diagram

PART 2

2 KEY SYSTEM REQUIREMENTS

There are currently 42 proposed Candidate KSRs as outlined in the table below.

RBS ID	Functional / Non Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to User Requirements	Proposed Validation Method	Status
	CSAT system	SR 1	The CSAT system shall be capable of obtaining a military Release To Service clearance for use on UK military helicopters.		Release To Service (RTS) clearance as Portable Electrical Device, Aircrew Equipment Assemblies (PED/AEA). Limitation – Not to be used during take-off / landing.	Non functional		01 K	Full Document/Evidence analysis	
	Airborne element	SR 2	The airborne element shall include the Panasonic Tough pad FZ-M1 to host the CSAT software.	Any modifications or additions to this tablet may require additional validation evidence e.g. tactile alerting system. Where appropriate the evidence to support the airborne element of the whole system shall show performance that is no	Panasonic Tough pad FZ-M1 shall be provided as part of the system solution[1] this will include the peripherals to charge the tablet and a suitable 'Peli' type carry case.	Non functional		01 K 04 M 35 1	Contractor documentation	

[1] It is recognised that compliance to this System Requirement (SR) has implications on the compliance of further SRs due to the specification/limitations of the Panasonic FZ-M1 tablet. When considering the airborne element of this system as a whole, it should be demonstrated that the performance is no worse than that of the Panasonic FZ-M1 tablet.

RBS ID	Functional / Non Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to User Requirements	Proposed Validation Method	Status
				worse than that of the FZ-M1 tablet.						
	Airborne element	SR 3	The Airborne system shall be of a dimension that minimises restrictions in the cockpit.	The system, as worn by the user, should have minimal impact on the safe operation of the aircraft i.e. not interfere with controls or aircraft components. During normal and emergency ingress and egress of the aircraft the system should not physically hinder the user. Note: FZ-M1 Tablet dimensions are 203 x 132 x 18mm. Weight 544.3g	The system shall be no larger than 220mm x 135mm x 35mm (LxWxH) Weight 850g including mounting tray	Non functional	To minimise physical impairment during operation, ingress and egress.	01 K 02 M 04 M	Aircraft ground test.	
	Airborne element	SR 4	The airborne element shall not be affected by other electromagnetic equipment carried by UK military helicopters	FZ-M1 tablet has been tested in line with Military Standard 461F to satisfy this requirement. Any changes or additions to this tablet may require	The EMC performance of the airborne element of the system should be shown to be no worse than that of the FZ-M1 tablet. Panasonic FZ-M1 EMC test report Ref A-047-12-V refers	Non functional		01 K 03 M	Airborne trial	

RBS ID	Functional / Non Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to User Requirements	Proposed Validation Method	Status
				additional validation evidence e.g. tactile alerting system.	The contractor shall show the extent to which any changes meet Def Stan 59-411.					
	Airborne element	SR 5	The airborne element shall not intentionally or unintentionally transmit e.g. Bluetooth or Wi-Fi	System such as Wi-Fi and Bluetooth should be Disabled to prevent and intentional or inadvertent operation.	Transmitting functions disabled. Software switching alone shall not be acceptable.	Non functional		03 M	Contractor documentation	
	Airborne element	SR 6	The airborne element shall not affect other electromagnetic equipment carried by UK military helicopters	FZ-M1 tablet has been tested to satisfy this requirement. Any changes or additions to this tablet may require additional validation evidence e.g. tactile alerting system. The tablet is to be configured as a non-transmitting device, it should be noted that inhibiting functions such as Wi-Fi and Bluetooth by software means only	The EMC performance of the airborne element of the system should be shown to be no worse than that of the FZ-M1 tablet. Panasonic FZ-M1 EMC test report Ref A-047-12-V refers The contractor shall show the extent to which any changes meet Def Stan 59-411.	Non functional		01 K 03 M	Airborne trial	

RBS ID	Functional / Non Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to User Requirements	Proposed Validation Method	Status
				will not provide a sufficient safety argument for carriage.						
	Airborne element	SR 7	The airborne element shall be fully independent of the host platform.	The system will be independent from the platform for GPS feed and power supply.	The airborne element will provide full functionality without GPS or electrical power input from the host platform for a period of >4 hours. Assuming a battery operating at 80% efficiency. **NOTE: The AIS requirement for use on the Merlin Mk2 platform is the exception to this requirement for AIS purposes only.**	Non functional		01 K 22 K 27 M	Contractor qualification	
	Airborne element	SR 8	The airborne system shall have the facility for changing batteries, this shall be possible without interruption to the system operation.	This procedure is not expected to be conducted whilst airborne.	Battery change conducted without the need to power down the tablet, pre battery change state should be maintained throughout.	Functional		27 M	Contractor demonstration	
	Airborne element	SR 9	The airborne element shall display, in colour.		The selected information is displayed to the user in colour in order to best support situational awareness to the user. Information shall be appropriately	Non functional	Ensure systems accommodate human capabilities to achieve required level of performance and to	01 K24 K	Airborne trial	

RBS ID	Functional / Non Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to User Requirements	Proposed Validation Method	Status
					presented for all required system functions to the specified user group.[2] E.g. Highlighting of obstruction data objects based on aircraft attitude, track and speed. Threats should be readily distinguishable.		promote system safety.			
	Airborne element	SR 10	The airborne element display shall be viewable in all cockpit lighting conditions independent of weather and time of day; dawn / dusk / night.		The user shall be able to adjust the screen/display to be usable/readable/understandable within the cockpit environment from full sunlight to night conditions. Information appropriately presented for all required system functions to the specified user group.[2]	Non functional	Ensure systems accommodate human capabilities to achieve required level of performance and to promote system safety.	01 K 29 K	Airborne trial.	
	Airborne element	SR 11	The airborne element shall be viewable when used with Night Vision Goggles (NVG) or Night Vision Systems (NVS)		The display can be adjusted to operate with NVG or NVS. Information is appropriately presented for all required system functions to the	Non functional	Ensure systems accommodate human capabilities to achieve required level of performance	01 K 26 K	Airborne trial	

[2] The user group is defined as UK Military Aircrew

RBS ID	Functional / Non Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to User Requirements	Proposed Validation Method	Status
					specified user group.[2] The contractor shall show the extent to which their system meets the requirements of STANAG 3224.		and to promote system safety.			
	Airborne element	SR 12	The airborne element shall continue to fully function in temperature conditions likely to be experienced as a result of being operated within a UK military helicopter	Note: Any changes or additions to this tablet may require additional validation evidence e.g. tactile alerting system.	Shall continue to operate without any performance degradation from -20 to +40 Deg C. Storage -40 to +70 Deg C	Non functional		01 K 04 M	Contractor qualification	
	Airborne element	SR 13	The airborne element shall be able to resist shock loadings, vibrations.	Note: Any changes or additions to this tablet may require additional validation evidence e.g. tactile alerting system.	The performance of the system shall be shown to be no worse than that of the MIL-STD-810G and IP65 standards to which the FZ-M1 tablet has been certified.	Non functional		01 K 04 M	Contractor qualification	
	Airborne element	SR 14	The airborne element shall be resistant to dust for use in a military environment.	Note: Any changes or additions to this tablet may require additional validation evidence e.g. tactile alerting system.	The performance of the system shall be shown to be no worse than that of the MIL-STD-810G and IP65 standards to which the FZ-M1 tablet has been certified.	Non functional		01 K 04 M	Contractor qualification	
	Airborne element	SR 15	The airborne element shall be waterproof for use in a military environment.	Note: Any changes or additions to this tablet may require	The performance of the system shall be shown to be no worse than that of the MIL-STD-810G	Non functional		01 K 04 M	Contractor qualification	

RBS ID	Functional / Non Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to User Requirements	Proposed Validation Method	Status
				additional validation evidence e.g. tactile alerting system.	and IP65 standards to which the FZ-M1 tablet has been certified.					
	Airborne element	SR 16	The airborne element shall be resistant to humidity.	Note: Any changes or additions to this tablet may require additional validation evidence e.g. tactile alerting system.	The performance of the system shall be shown to be no worse than that of the MIL-STD-810G and IP65 standards to which the FZ-M1 tablet has been certified.	Non functional		01 K 04 M	Contractor qualification	
	Airborne element	SR 17	The airborne element shall be operable in existing aircrew clothing, particularly gloves		System operation shall not be significantly impacted by crew operating in the complete range of required aircrew clothing including aircrew gloves	Functional		30 M	Airborne trial	
	Airborne element	SR 18	The airborne element shall be physically mounted independent of the host platform		The system will be suitably secured via a mounting system onto the operator's thigh (left or right) within the specified user group.[2] System shall be easily removed for ingress and egress.	Functional		30 M 31 M 36 M 37 M	Airborne trial	
	Airborne element	SR 19	The airborne element shall alert the user when an obstruction is within the alert parameters set by the user		A Visual alert will be appropriately displayed on the tablet to alert a user to the presence and location of an obstruction within the parameters set by the user. The	Functional		34 K	Airborne trial	

RBS ID	Functional / Non Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to User Requirements	Proposed Validation Method	Status
					alert will be displayed in a manner suitable for a user within the specified user group.[2]					
	Airborne element	SR 20	The airborne element shall maintain GPS performance in UK Military Helicopter types		Able to maintain GPS lock throughout low level (<500 Ft AGL) helicopter operations. It is recognised that GPS performance may be affected by rotor blades, low level manoeuvres and canopy treatments as well as line of sight.	Functional		22 K	Airborne trial	
	Airborne element	SR 21	The airborne element shall immediately alert the user when a low power condition occurs.		A visual indication of power state will be provided, a visual alert will be displayed to the user when remaining power drops to 20 minutes of operation in the current mode. The alert will be displayed in a manner suitable for a user within the specified user group.[2]	Functional		28 M	Contractor demonstration	
	Airborne element	SR 22	The airborne element shall be updated via the base station.		The airborne element will be updated (e.g. geographical data, software and anti-virus updates) and configured for	Functional		05 K 06 1 07 K	Contractor Demonstration	

RBS ID	Functional / Non Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to User Requirements	Proposed Validation Method	Status
					mission via a cable connected to the base station (Minimum of 4 tablets simultaneously). The user will manually initiate updates.					
	Airborne element	SR 23	The airborne element shall have sufficient data storage to hold DGC data, No1 AIDU data, sortie mapping and operating software.		256GB data storage capability.	Non functional		05 K	Contractor documentation	
	Software	SR 24	The system software shall be of sufficient integrity.		To be defined by the safety assessment process. CSAT system will be an advisory system only.	Non Functional	Equipment is used in advisory capacity to deliver situational awareness.	22 K 23M 28M 33M	Contractor documentation	
	Software	SR 25	The system software shall use Spatial Data from MoD as supplied by Defence Geographic Centre & No1 Aeronautical Information Documents Unit (No1AIDU). Digital Vertical Obstruction File (DVOF) Digital Terrain Elevation Data (DTED) Electronic Flight Bag (EFB)		The system shall be compatible with DGC and No1AIDU file formats as supplied. Data is only to be sourced via the DGC/No1 AIDU (MilFlip) Server. This is to include; Helicopter Landing Sites (HLS), Approach Plates AIH, En-Route Supplement (ERS) via AIDU MilFLIP Server. (Electronic Flight Bag). This data will be loaded, along with the contractor	Functional		05 K	Contractor documentation	

RBS ID	Functional / Non Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to User Requirements	Proposed Validation Method	Status
					supplied software, onto the tablet and base station.					
	Software	SR 26	The system software shall facilitate user selection of 2D and 3D visualisation of geographic data.		The user shall be able to toggle the display between 2D and 3D representation of the full geographical data derived from DGC and No1 AIDU provided data. This will be available on the tablet for operational use and on the base station for planning purposed.	Functional		33 M	Contractor demonstration Airborne trial	
	Software	SR 27	The system software shall provide a facility for the user to set alert parameters on the tablet and base station to suit the sortie details/conditions.	The airborne element will be operated by military Rotary Wing aircraft. The operating environment will be <500ft Minimum Separation Distance and below.	Alert Parameters to be set shall include but not be limited to: Distance to obstruction. Time to obstruction based on current track and speed. Width of track Vertical setting (Fixed & dynamic) Vertical tolerance (bubble)	Functional		24 K	Airborne trial	
	Software	SR 28	The system software will drive an alert to the user when a risk of flight into an	The airborne element will be operated by military Rotary Wing aircraft.	The system will use the geospatial data, GPS positioning and current track to determine when the	Functional		05 K 24 K 33 M 34 K	Airborne trial	

RBS ID	Functional / Non Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to User Requirements	Proposed Validation Method	Status
			obstruction or terrain exists.	The operating environment will be <500ft Minimum Separation Distance and below.	user set parameters are reached/breached, as defined by SR 27. This will trigger the alerting mechanism defined at SR 19. The system will need to operate in real time.					
	Software	SR 29	The system software shall have a restore function for use on the base station.		There must be a capability to restore the base station from supplied resource and not require supplier support. This function is required to allow restoration to the last system update point and will be completed by an administrator.	Functional		17 M	Contractor demonstration	
	Software	SR 30	The system software shall drive an indication of the validity of the GPS position to the user.		The system will display a warning message if a 3D GPS solution had been lost.	Functional		23 M	Airborne trial	
	Software	SR 31	The system software shall update the validity indication of the GPS position in real time.		Update GPS validity display within an acceptably short interval[3] of a change of GPS position status.	Non functional		23 M	Contractor qualification	
	Software	SR 32	The system software configuration and version of data loaded will be displayed to the		The system shall display the version details of the data and software loaded on the	Functional		18 M 19 1	Contractor demonstration	

[3] To as near to real time as feasible within the constraints of the tablet.

RBS ID	Functional / Non Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to User Requirements	Proposed Validation Method	Status
			user for cross checking on start up.		system (tablet and base station) This is to provide a reference for the user to manually cross check to ensure they are using the latest data and software.					
	Software	SR 33	The system software shall facilitate a zoom function.		The user will be able to zoom in and out to view the imagery to the highest resolution determined by the source data. Operation should be at a refresh rate so as to minimise any detrimental display delay, whilst not to affect system operation.	Functional		25 M	Contractor demonstration	
	Software	SR 34	The system software shall provide the user with the facility to scroll pan and scan across all geo-products displayed on the CSAT system.		The user will be able to pan and scan across imagery to the highest resolution determined by the source data. Operation should be at a refresh rate so as to minimise any detrimental display delay, whilst not to affect system operation.	Functional		25 M	Contractor demonstration	
	Software	SR 35	The system software shall provide & support Automatic Identification System software for maritime	Software/tablet is to interface with the existing AIS receiver (Avionetics	The system is able to interface with the Avionetics RX-5 receiver via the USB interface fitted to Merlin Mk2 as	Functional	Utilised for maritime operations to increase situational awareness.	42 K	Contractor documentation	

RBS ID	Functional / Non Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to User Requirements	Proposed Validation Method	Status
			Identification Friend or Foe.	RX-5 receiver) and USB interface fitted to Merlin Mk2.	detailed in Paragraphs 1.10.2 and 1.10.3. The system will interpret the data from the Avionetics RX-5 receiver and display the AIS information overlayed onto the mapping imagery.					
	Software	SR 36	The system software shall have a Sy Ops document		To be produced and issued in accordance with JSP 440	Non functional		01 K 38 1	By inspection	
	Base Station	SR 37	The base station shall be able to survive in the conditions likely to be experienced as a result of being operated in a UK military flight operations planning environment.	Ruggedised equipment will form part of the Safety Assessment. Ground based elements of the system will need to be included, but derived levels of robustness from system Safety Assessment will dictate design.	The base station will be in the form of a laptop, but the derived levels of robustness from system Safety Assessment will dictate design. Minimum of CE Marking will be required.	Non functional		04 M	Contractor qualification	
	Base Station	SR 38	The base station and peripherals shall be supplied in a case.		Suitable toughened carry case for storage and transportation in a UK military flight operations planning environment, including transportation by	Non functional		04 M	Contractor qualification	

RBS ID	Functional / Non Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to User Requirements	Proposed Validation Method	Status
					road, rail and air (fixed and rotary wing)					
	Base Station	SR 39	The base station shall be updated by a method led and coordinated by the contractor.		The base station will be the conduit through which all external updates will be applied to the CSAT System. All DGC, No1 AIDU and contractor supplied software updates will be collated by the contractor. They will be delivered via suitable removable media to UK operating base locations within 14 days of the release of DGC/No1 AIDU updates that are released on a 28 day cycle or in line with DGC/No1 AIDU updates, whichever is sooner.	Non functional		05 K 06 1 07 K	Contractor documentation	
	General/Support	SR 40	The contractor shall supply a user manual for the system to support system operation/usage by operatives.		The System shall have a comprehensive, clear and effective user manual suitable for training which takes the user through the logic of how the System is designed to operate.	Non functional		08 M	By Inspection	
	General/Support	SR 41	The contractor shall supply a user quick reference guide for the		The system shall have a Quick Reference guide for	Non functional		09 M	By Inspection	

RBS ID	Functional / Non Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to User Requirements	Proposed Validation Method	Status
			system to support system operation/usage by operatives.		basic system operations as an aide memoir.					
	CSAT system	SR 42	The system shall integrate humans in ways that maximise safety systems		The system design shall integrate the users in a way that minimise the opportunity for human error, including minimising workload associated with using the system and maximises head out time.	Non functional		36 M 37 M	Demonstration / Airborne Trial	

Notes:

Measures of Performance. A Measure of Performance (MOP) describes 'How Well' the system function should perform.

PART 3

3. SYSTEM REQUIREMENTS

RBS ID	Functional/ Non-Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to URs	Proposed Validation Method	Status
	CSAT System	SR 43	The CSAT system shall be capable of handling information up to Secret.	The user requirement is to have a system capable of, when applicable, storing SECRET data in the form of images. The normal security classification will be Official Sensitive.	Demonstrate the capability to meet security accreditation at SECRET, refer to SOR.	Non functional	The User shall be able to import data, images and planning files and display them as part of the moving map display as images only. That data may be classified SECRET.	12 2 38 1	Contractor documentation	
	Software	SR 44	The system software shall facilitate user reconfigurable display modes.		The system will allow user reconfiguration of the display mode to different modes. Basic functions shall include but not be limited to: 1. Reset moving map for north up. 2. Reset moving map for a/c track. 3. Select map type independently of zoom state. 4. Define alert height. 5. Time to impact obstruction	Functional		32 1	Contractor Demonstration	

RBS ID	Functional/ Non-Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to URs	Proposed Validation Method	Status
	Software	SR 45	The system software shall make provision for the User to be able to mark-up maps on the system in standard aeronautical format.	Marking of maps is to: Capture standard flight plan data. Marking of obstructions for use during later flights and for later inclusion in the database. Marking of specific areas on maps. **Note**: Notification to DGC of newly identified obstructions will be via normal external channels and not via this system.	The user should have a marking facility using standard aeronautical format and user selected shapes, lines and points that enable: Capture of standard flight plan data. Marking of obstructions for use during later flights and for later inclusion in the local base station database. Marking of specific areas on maps. This facility should be available on the base station and tablet.	Functional		10 1 11 1 13 1	Contractor Demonstration	
	Software	SR 46	The system software shall make provision for the User to maintain a local map mark up of hazards in standard aeronautical format.	This function is to allow users to maintain a more up to date map of local hazards. This is to capture those hazards that might only be present for a short period and so will	The user should be able to use standard aeronautical marking formats to mark obstructions onto the maps contained within the base station data base but not yet identified by the DGC data.	Functional		13 1	Contractor Demonstration	

RBS ID	Functional/ Non-Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to URs	Proposed Validation Method	Status
				never appear on the DVOF, or whilst they are being processed for inclusion onto the DVOF.	This data will be used to upload the obstruction information to the tablets connected to that base station. **Note**: Formal notification to DGC of newly identified obstructions will be via normal external channels and not via this system.					
	Software	SR 47	The system software shall make provision for a search functionality.		The user should have a Search Functionality of data fields within the system. E.g. Shapes, Lines and Spot Points, GARS/CGRS Cells, Spec Imagery, User points, Own position, 1 AIDU Electronic Flight Bag, this should be available on the base station and airborne element.	Functional		16 1	Contractor Demonstration	
	Software	SR 48	The system software shall make provision to be able to accept and display user mission data.	Data consists of images that would be loaded onto the base station and subsequently	Images[4] only, there should be a facility to load and anchor that image to a defined world location. That should be marked	Functional		12 2 14 2 15 1 20 2	Contractor Demonstration	

[4] In this instance "Image" should be taken to mean a graphical representation / overlay that cannot be interacted with.

RBS ID	Functional/ Non-Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to URs	Proposed Validation Method	Status
				onto the tablet. Those images may need to be geographically linked and shown at the appropriate position on the map i.e. an aerial photograph showing a helicopter landing site. NOTAM Files	on mapping within the airborne element to provide the user with an awareness that images are available in the operational area.					
	Base Station	SR 49	The base station shall be able to accept and display user mission data.	Imported data will be first loaded onto the base station, configured and then uploaded to the tablet. Mission pack selection. The user has the ability to load pre-selected mission data files as images. The User shall be able to import exercise maps.	The base station should have the facility to import data via USB or CD/DVD in support of SR 48	Functional		12 2 14 2 15 1 20 2	Contractor demonstration	
	Software	SR 50	The software should facilitate a capability to accept external data files comprising	e.g. NOTAM files	The user is able to manually load aeronautical data e.g. NOTAMs.	Functional		14 2	Contractor demonstration	

RBS ID	Functional/ Non-Functional Area	Unique ID	System Requirement	Remarks	Minimum Measure of Performance	Requirement Type	Justification	Link to URs	Proposed Validation Method	Status
			standard aeronautical data and display, where appropriate, this data as part of the map		These will be displayed where appropriate as part of the map. These should be loaded onto the base station and subsequently transferred to the airborne element during the update/upload process.					
	Software	SR 51	The system software should be capable of supporting FRCs with the User being able to access platform FRCs through the system.		Display as a PDF image file only. Note: some files are classified RESTRICTED/OFFICIAL SENSITIVE. These should be loaded onto the base station and subsequently transferred to the airborne element during the update/upload process.	Functional		40 2	Contractor demonstration	
	Software	SR 52	The system software should facilitate the capability to load and interrogate Air Tasking Orders / Airspace Co-ordination Messages.		Load as a text document only. These should be loaded onto the base station and subsequently transferred to the airborne element during the update/upload process.	Functional		41 2	Contractor demonstration	

4. CONTEXT DOCUMENTS

- FZ-M1 Spec Sheet
- FZ-M1 EMC Report

5. GLOSSARY OF ABBREVIATIONS AND TERMS

5.1 Glossary of Abbreviations.

AEA	Aircrew Equipment Assemblies
AGL	Above Ground Level
AIDU	Aeronautical Information Document Unit
AIS	Automatic Identification System
CBRN	Chemical, biological, radiological and nuclear
CE	Conformité Européene
CGRS	Common Geographic Reference System
COTS	Commercial Off The Shelf
CSAT	Cockpit Situational Awareness Tool
DGC	Defence Geographic Centre
DTED	Digital Terrain Elevation Data
DVOF	Digital Vertical Obstruction File
EFB	Electronic Flight Bag
EMC	Electromagnetic Compatibility
ERS	En-Route Supplement
FOC	Full Operating Capability
FRC	Flight Reference Cards
GARS	Global Area Reference System
GEOINT	Geospatial Intelligence
GPS	Global Positioning System
HLS	Helicopter Landing Sites

ISD	In Service Date
JHC	Joint Helicopter Commands
MOP	Measure of Performance
MOTS	Modified Off The Shelf
NOTAM	Notice to Airmen
NVG	Night Vision Goggles
NVS	Night Vision Systems
OSD	Out of Service Date
PED	Portable Electrical Device
RTS	Release To Service
SA	Situational Awareness/Safety Assessment
SGC	Specialist Geospatial Centre
SOP	Standard Operating Procedures
SOR	Statement Of Requirement
SRD	System Requirements Document
URD	User Requirements Document

5.2 Glossary of Terms.

Analysis	Analysis is the verification of a product or system using models, calculations and testing equipment. Analysis allows someone to make predictive statements about the typical performance of a product or system based on the confirmed test results of a sample set or by combining the outcome of individual tests to conclude something new about the product or system. It is often used to predict the breaking point or failure of a product or system by using non-destructive tests to extrapolate the failure point.
Demonstration	Demonstration is the manipulation of the product or system as it is intended to be used to verify that the results are as planned or expected.
Inspection	Inspection is the non-destructive examination of a product or system using one or more of the five senses (visual, auditory, olfactory, tactile, taste). It may include simple physical manipulation and measurements.
Measure of Performance	A Measure of Performance (MOP) describes 'How Well' the system function should perform.
Obstruction	Any object connected to the ground that is likely to affect the operation of an aircraft during low flying activities, for example power lines, telephone lines, pylons, wind turbines, antenna, masts and buildings.

Tablet	Panasonic FZ-M1 Tough pad family
Test	Test is the verification of a product or system using a controlled and predefined series of inputs, data, or stimuli to ensure that the product or system will produce a very specific and predefined output as specified by the requirements.