SYSTEM REQUIREMENTS DOCUMENT

C17 CSAE DT

A400M Large Boat Aerial Delivery (LBAD)

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PART 1

General Description

1. **Introduction.** The User requires the ability to airdrop the selected Maritime Craft with and without following parachutes:

   a. Maritime Interdiction Craft (Medium Variant)

   b. Maritime Interdiction Craft (Heavy Variant)

   c. Littoral Patrol Boat

   d. Riverine Patrol Craft

2. The delivery A/C is the Atlas C Mk1 (A400M). This document describes the System Requirements to address the needs for each impacted DLoD.

SRD Structure

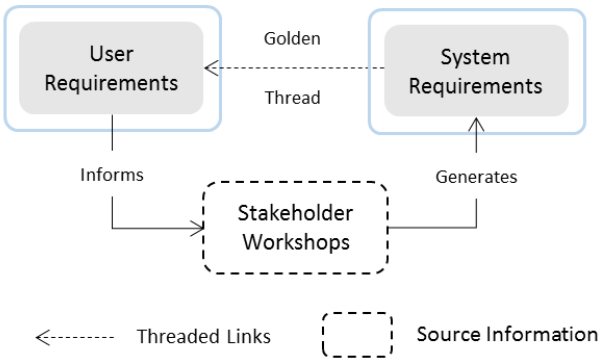

Figure 1: Generating Systems Requirements

3. **System Requirements Document.** This System Requirements Document (SRD) is the repository for the System Requirements (SRs) that articulate the functions to be delivered by the A400M LBAD. The Requirements addressed within this SRD have been developed from the Large Boat Air Drop (LBAD) capability from the A400M Atlas C Mk 1 URD [1] through stakeholders workshops with a view to maintain the golden thread with the User Requirements as described in Figure 1.

Part 1 provides a general description of the System of interest, origin of the requirement along with an explanation of how the System Requirements are structured in relation to the User Requirements.

Part 2 lists the Key System Requirements (KSRs) as an extract from the full set of System Requirements in tabular form.

Part 3 presents the full set of System Requirements in tabular form.

Thereafter, the SRD provides a listing of relevant context documents, abbreviations, and terms.

Origin of the Need

4. **Single Statement of User Need.** The User shall be able to prepare, and airdrop select boat types with or without maritime parachutists, onto water, by day or night, worldwide from the Atlas C Mk1 (A400M) A/C [1].

Operational Context

5. **Strategic Projection of Field Elements.** LBAD will be used by MAB / RAF 1Gp across a spectrum of maritime operations. The platform will provide a flexible Air Despatch capability to provide a means of deploying maritime craft and parachutists for contingent tasking, avoiding the limitations imposed by relying on prepositioned craft or forward basing on surface platforms and the necessity to have accurate / timely intelligence picture. LBAD will enable the efficient use of load space and maximise the capability of AT to cater for the demands of future operations and equipment [1]. A key component of the User's ability is to strategically project its FEs and operational capabilities via Aerial Delivery.

System Boundary

6. **Breakdown of System Boundaries.** The System is composed of a compatible platform designed to fit onto the Atlas C Mk1 (A400M) capable of supporting and restraining the select boat types and provision of all supporting extraction parachuting capability. The System boundaries are outlined in Table 2.

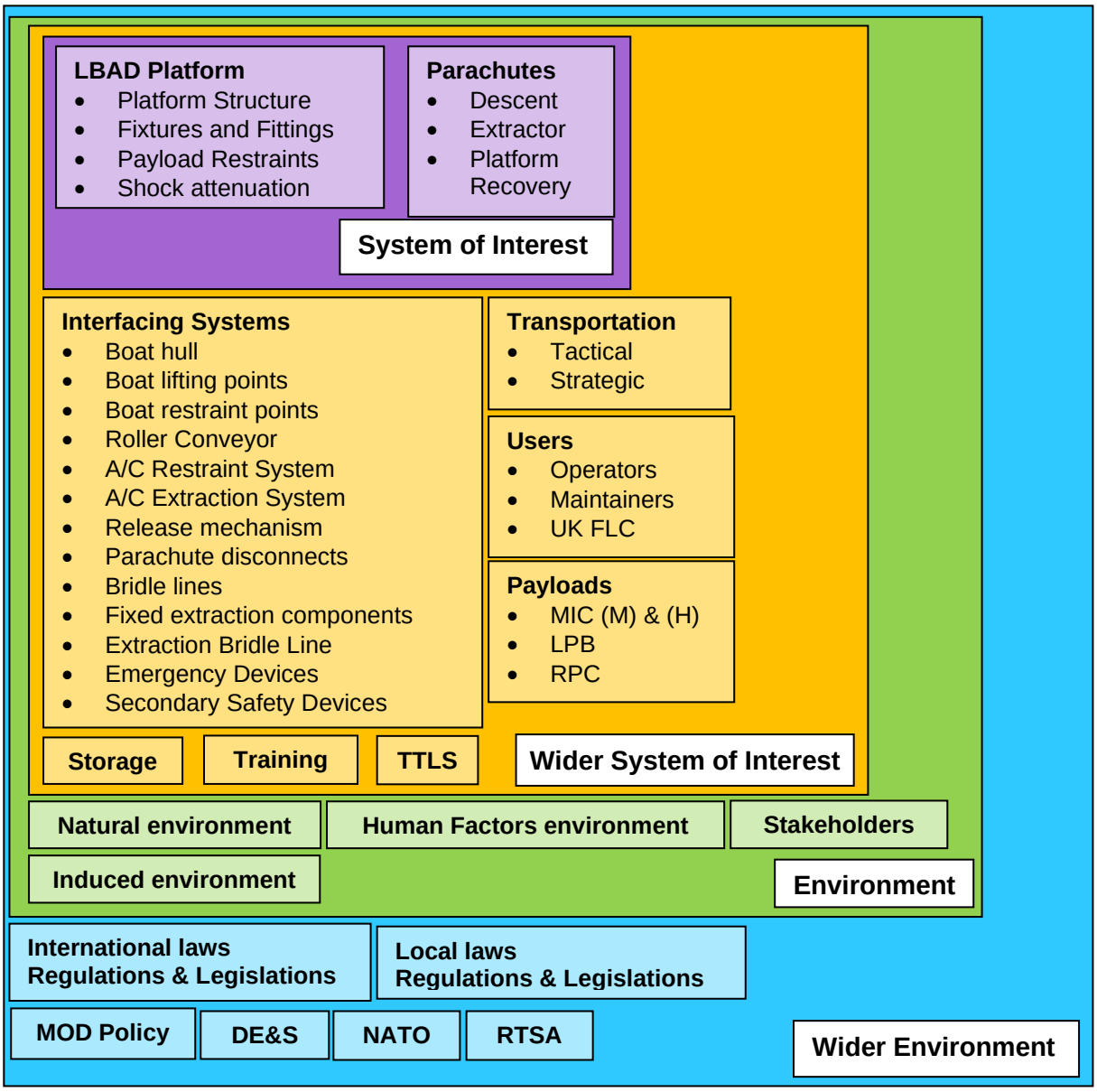

Figure 2: System boundaries

7. **The System as referred to in the System Requirements includes:**

   a. The platform

   b. The capacity to support and restrain the specified payload(s) securely

   c. The capacity to secure the fully rigged platform onto the A/C for transport

   d. The capacity to release and extract the platform for Airdrop

   e. The capacity to deliver the payload safely onto the Drop Zone or separate during descent

   f. The capacity for the payload to be serviceable and usable post de-rigging from the System.

System Context

8. **The System Context describes the fundamental interdependencies with other systems.**

   a. The LBAD System functionality depends upon its capacity to be loaded onto an Atlas C Mk1 (A400M), rigged and safely Airdropped with the payload recovered in a serviceable condition.

   b. The existing storage system available at MOB and DOB does not require specific adaptation to accommodate the System.

   c. The LBAD System must be compatible with in Service ACHE to be transferred from the preparation area to the A/C.

   d. The system will be operated under Visual Meteorological Conditions (VMC) day and night; and deployed onto the DZ under specified wind conditions.

   e. A boat will be able to power off the platform once de-rigged on the DZ.

   f. No modification to the A/C is required to accommodate the System.

   g. Users wearing operational clothing plus Personal Protective Equipment (PPE) will be able to operate and maintain the System.

System Accountability

9. DO/CDO. The DO/CDO is expected to assume responsibility and accountability for all elements/components of the LBAD system as shown in Figure 3.

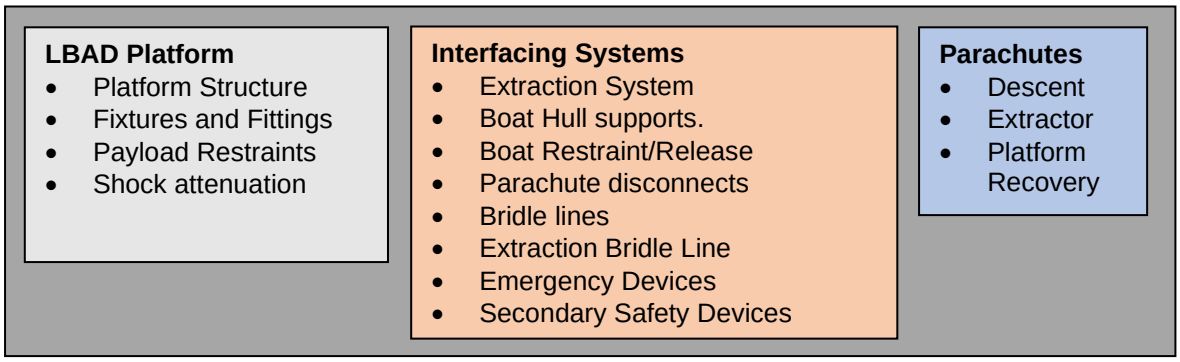

Figure 3: System Accountability

Applicable Acquisition Strategy

10. Commercial Aspects. The Commercial aspects for LBAD will be managed by a Commercial team within the C17 CSAE DT [4]. The competition will be governed by the DSPCR 2011 framework [5]. Following contract award, the contract shall be governed by a Management team.

Equipment Required to meet IOC and FOC

11. **IOC.** IOC is defined as having a specified number of trained front-line crews, (including Air Despatchers) capable of airdropping LBAD with a set number of complete LBAD Systems held to provide NS and continue training in support of FOC.

12. **FOC.** FOC is defined as having requisite trained front-line crews (including Air Despatchers) capable of airdropping LBAD with all LBAD Systems held against NS, reconstitution requirements and to maintain training currency.

Planned OSD

13. **OSD**: Under current planning assumptions the OSD for LBAD is assumed to be in line with the OSD of the Atlas C Mk1 (A400M), notionally 2050 [1].

Constraints

14. **Technical**. The system must be useable with the current Atlas C Mk 1 (A400M) Cargo Handling System (CHS), A/C role equipment and existing MHE and ACHE [1].

15. **Resources**. A/C and manpower resources will be interlaced with other competing Aerial Delivery projects and managed according to Authority priorities [1].

Priorities

16. Each linked User Requirement in Part 3 (Column 10) has been allocated a priority within the URD [1] to indicate the willingness to trade and indicate the willingness to allow the achievement of a requirement to influence design, cost and / or programme risk.

17. The categories of priority are characterised as follows:

Table 1: Requirement priority

Priority	Clarification
Key	Capability requirements or constraints that are assessed as being Key to the achievement of the mission or of interest to management. Key System Requirements characterise the whole SRD and are used to measure project performance. These will require re-endorsement by both the SRO and must be passed to the Approving Authorities (if after Full Business Case) or comment if they are traded. Penalty statements should accompany Configuration Control Board recommendations.
Mandatory	Requirements that must be met and represent legal obligations (for example MAA safety regulations).
1	Requirements of great importance and considered essential by the user. Programme Manager can trade after endorsement from the Programme Board.
2	Highly desirable requirements that may be traded if risks to the project cannot be mitigated. Requirement Manager can trade after discussion with Programme Manager.
3	Desirable requirements only. Requirement Manager can trade after discussion with Programme Manager.

18. **C17CSAE DT Desk Officers** are empowered to accept any solution which is within the parameters articulated in the endorsed URD and Business Case (BC) [3] and may trade between criteria to achieve a better overall output and value for money for Defence. If such trade would compromise the agreed minimum level for a Key System Requirement (Key), then Requirement Managers, via the Desk Officers must seek approval from the Senior Responsible Owner (SRO), informing the Programme Board of the proposed changes before such trades are agreed.

System Model

19. The different stages the system goes through prior to deployment are described in Figure 4. Note that although the objective is to load the System onto the A/C as an Airdroppable load it will also be considered as a transportable load.

20. The sequence of events prior to deployment are described in Figure 5. Note that this sequence is the main course of events. It would be possible to forego deployment and treat the System as a transportable load which would then be de-rigged once it has been unloaded or pre-positioned in a rigged condition for later tasking.

Assumptions

21. The following list of assumptions is taken from the MDAL [6]:

Table 2: Main Assumptions

Assumption	Review	DLOD / Owner
The LBAD system will be air droppable from A400M with no modifications to the A/C	Aug 21	Equipment / James MacDonald
The LBAD system will be trialled during the Assessment Phase	Aug 21	Equipment / James MacDonald
ATEC will be responsible for leading all T&E activity	Aug 21	Equipment / James MacDonald
Authority will not fund any Industry prototype development	Aug 21	Equipment / Jason Atkinson
Industry will loan complete systems for trials free of charge to the Authority	Aug 21	Equipment / Jason Atkinson
Contractor will be responsible as a single DO/CDO for the ‘whole’ design, provision of CofD/F100A with limits that consistently meet the URD safely.	Jul 23	Equipment / TAA

22. The management of Risk, Assumptions, Issues, Dependencies and Opportunities (RAIDO) is documented in the C17CSAE Risk Management Plan (RMP).

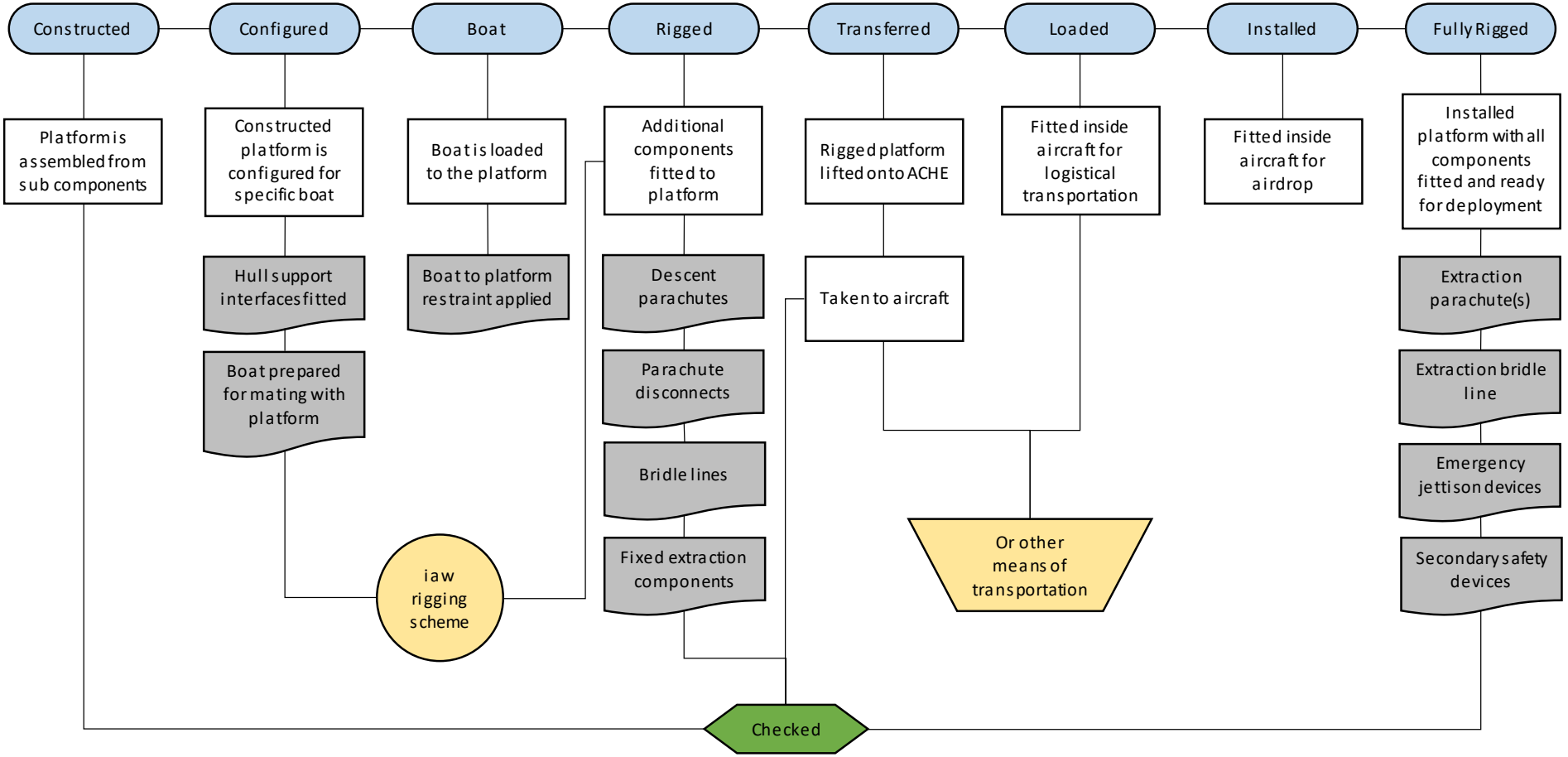

Figure 4: Stages of LBAD Prior to Deployment

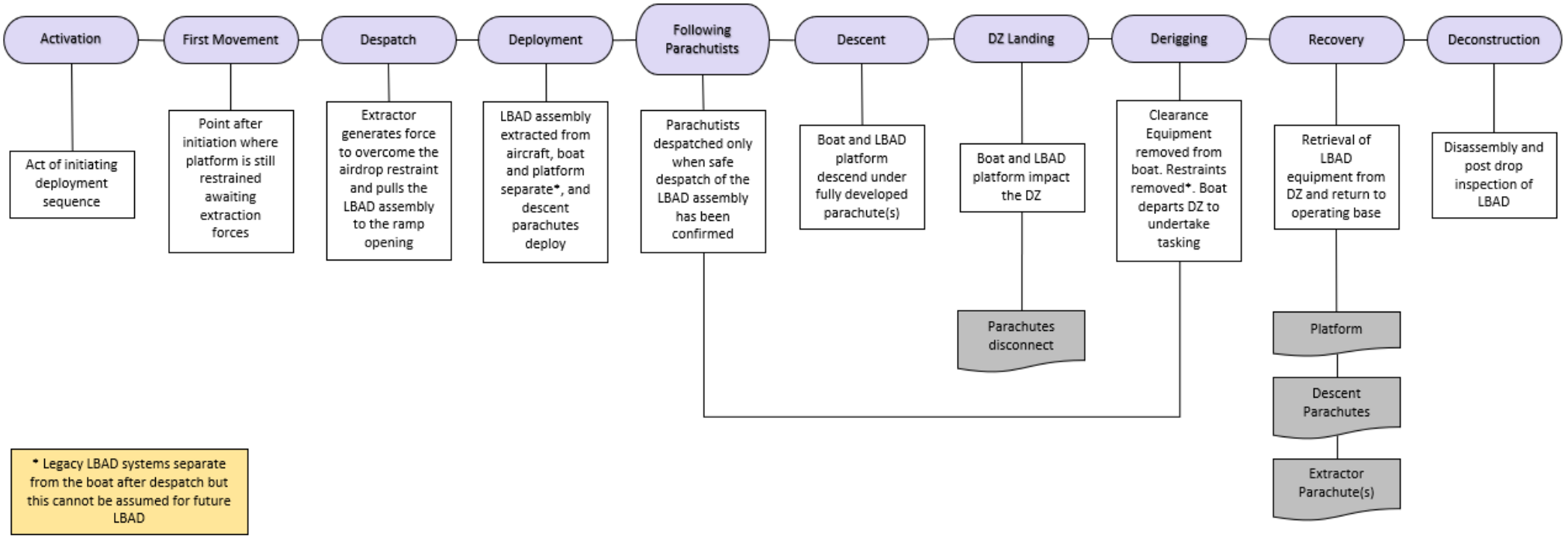

Figure 5: LBAD Stages of Operation

PART 2

Key System Requirements

23. There are currently 39 Candidate Key System Requirements (KSRs) as outlined in the table below.

Table 3: Key System Requirements

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
1.1	F	The system shall be capable of despatch from the Atlas C Mk 1	IAW Atlas C Mk1 RTS and LBAD AERC.	As Threshold.	iaw Project Mandate		K	Candidate	SSUN
1.2	F	The system shall be capable of despatch iaw the aircraft OEM certified methods	As an extracted load	As Threshold			K	Candidate	1
1.3	F	The system shall be capable of being despatched as up to 2 individual single or 2 sequential payloads	Single payload per LBAD platform on separate DZ passes	2 x payloads on individual LBAD platforms despatched in a single pass (sequential despatch)	To meet capability CONEMP/CONUS E		K	Candidate	1
1.4	NF	The System shall be capable of being held at a specified readiness state	Held in a partially ready to use rigged condition, with limitations on time spent in this condition (minimum of 28 days)	Held in a ready to use, rigged condition, for a defined period of time (minimum of 28 days)	To meet capability CONEMP/CONUS E	Contractor to provide an ORSS defining the servicing required while held at readiness	K	Candidate	4
1.6	F	The system shall be capable of despatch with following tailgate parachutist equipment	Compatible with parachutists following using the SL	As Threshold	BT380 is the only currently cleared parachute for water entry.	BT380 currently SL only, possible intent for FF in future	K	Candidate	1

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
1.7	F	The System shall have the capability to adapt the LBAD platform to interface with **ALL** selected payloads.	LBAD platform certified for all specified payloads as follows; Littoral Patrol Boat (LPB) Riverine Patrol Craft (RPC) Maritime Interdiction Craft (Medium) (MIC(M)) Maritime Interdiction Craft (Heavy) (MIC(H))	LBAD platform for all specified and future certifiable payloads.	An adaptable single platform capable across the spectrum of payloads provides maximum VfM for the Authority.	ICD 004 to 007 - Specific Payloads	K	Candidate	2
1.21	F	The System shall minimise storage space required within MOB and DOB locations	Minimal footprint possible for non-readiness systems	As Threshold.	Space becomes a premium within AD preparation areas. Ability to reduce footprint for systems not held at readiness will benefit daily AD activities.		K	Candidate	5
1.29	F	The System shall be capable of configuration (on a pre-prepared platform), from receipt of payload to ready for transport to A/C within a defined timeframe.	Each system prepared and rigged by 5 trained personnel within 8 hours from receipt of payload.	Each system prepared and rigged by 5 trained personnel within 5 hours from receipt of payload.	To facilitate planning and readiness schedules.	Payloads will need to pre-configuring before being mounted on the LBAD Platform	K	Candidate	9

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
1.31	F	The System shall provide for securing the payload to the LBAD platform	IAW Atlas C Mk 1 payload restraint criteria Supplier is expected to utilise existing payload attachment points (LPB & RPC) and design for MIC (M & H) or may elect to design a single payload attachment interface for all craft	IAW EASA CS 25.561	The payload must be secured within the platform to meet the required restraint criteria for the A/C and ensure remains secure as required, through all stages of the LBAD deployment.	Limitations may differ to the published Def Stan 00-003 criteria. (MSP ratings for load attachment points given in Def Stan, no mention of Extracted Boat capabilities) There is precedence for ODH acceptance of risk to lower factors. Payloads expected to be fitted with specific restraint points to ensure the hull design is not a limiting strength factor. Littoral Patrol Boat (LPB). Riverine Patrol Craft (RPC) and Maritime Interdiction Craft (MIC M & H) attachment points are detailed within specific ICDs	K	Candidate	10

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
1.35	F	The System shall incorporate a payload specific airdrop cover	1. Bespoke Airdrop Payload cover, to ensure no hazards during despatch and deployment; 2. Capable of deck access during system rigging, installation and on DZ; 3. Capable of easy removal upon DZ 4. Incorporate any additional protection from AD equipment to payload equipment and instruments as required. 5. Quantities required: LPB x 6 RPC x 5 MIC (M) x 7 MIC (H) x 7	As Threshold	Winning LBAD Supplier will be required to engage with OEM and JADTEU on this element post Contract Award	Respective Payload ICDs will provide the payload silhouette for the payload cover. Payload cover will be required for Flight Trials. Airdrop payload cover shall not increase the maximum height of the payload exceeding the limitation for extracted loads	K	Candidate	11
1.36	F	The System shall define payload position criteria when fitting to the platform.	Defined envelope for lateral and longitudinal payload C of G position, identifying the maximum and minimum positions.	As Threshold	To define optimum loading position of payload to platform		K	Candidate	2
1.38	F	The System shall ensure the optimum bow-down angle is maintained during the payload descent.	Payload is suspended at optimum bow-down angle range throughout descent phase.	As Threshold	Ensures entry into water is controlled, increasing survivability of the payload.	Bow down angle range will be determined through the T&E phase for each payload.	K	Candidate	2

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
2.8	F	The System shall be compatible with the Atlas C Mk 1 Cargo Handling System (CHS)	Platform interfaces with CHS locks and GRS	As Threshold.	Platform must be compatible with side rail and lock profiles	Atlas C Mk 1 is only cleared for 4-track roller configuration despatch of large Extracted Loads A400M documentation contains details of specific lock engagement profiles	K	Candidate	10
2.10	F	The System shall be compatible with in Service ACHE.	ACHE at MOB and DOB. Compatible with: 1. Transfer method (Roller trays) 2. Weight limitations 3. Dimensional limitations 4. Restraint to ACHE	As Threshold.	Reduce the requirement for specialist ACHE for loading LBAD only. Utilising extant ACHE at the DOB reduces the requirement for further specialist equipment per A/C load.	The equipment used to transfer the 'system' to the A/C. Currently this is the Atlas Mk 2A. (ICD 002)	K	Candidate	8
3.1	F	The System shall allow the deployment of a single LBAD platform.	One LBAD platform deployed per pass.	As Threshold.	Flexibility in A/C utilisation or ability for single platform despatch for training or operational reasons.		K	Candidate	1

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
3.2	F	The System shall allow the deployment of two LBAD platforms.	One LBAD platform deployed per DZ pass or 2 differing DZ's	Two LBAD platforms sequentially deployed in a single DZ pass.	Ability to drop both LBAD platforms in sequence without having to airborne re-rig. Ability to drop one LBAD platform in one pass then the other LBAD platform on a second or alternate DZ		K	Candidate	1b
3.3	F	The System shall be able to despatch into water, worldwide.	In Visual Meteorological Conditions (VMC) day and night.	As Threshold.	To meet capability CONEMP /CONUSE		K	Candidate	1
3.4	F	The System shall be dimensioned to avoid clashes with A/C boundaries on deployment.	Compliant with Airbus certified extracted load dimensions.	As Threshold.	The A/C cargo compartment, Cargo Ramp & Door, A/C external components and role equipment must be safe from contact or damage from the deploying LBAD System	A400M ICD	K	Candidate	12

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
3.15	N/F	The System shall be airdropped to a defined accuracy.	All components of the LBAD system will land no more than 400yds (365m) from intended (Impact Point) IP. Following parachutists will be despatched after specific "T" time to RV with despatched boat	All components of the LBAD system will land no more than 200yds (183m) from intended IP. Following parachutists will be despatched after specific "T" time to RV with despatched boat	To meet capability CONEMP /CONUSE	"IP" is defined as the exact location where the boat is planned to land within the DZ. Safety separation between LBAD system and following Parachutists ("T" time) will be determined through T&E. This will vary according to wind conditions and drop profile.	K	Candidate	14
3.16	N/F	The System shall be capable of despatch from a specified range of altitudes.	LBAD system only: Min drop height 1000ft ASL Max drop height 8000ft PA	LBAD system only: Min drop height 750ft ASL Max drop height 12000ft PA	To meet capability CONEMP /CONUSE	Minimum drop altitude will be dictated by any following parachutists, parachute despatch limitations iaw AERC. Evidence will be required to support parachute deployment up to the maximum drop height	K	Candidate	13

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
4.1	F	The System shall be deployed onto the DZ under specified wind conditions.	DZ surface wind considering height of canopy at touchdown: 25kts.	DZ surface wind considering height of canopy at touchdown: 30kts.	To ensure load can be received and derigged within operational parameters.	DDH / ODH may increase airdrop surface windspeed clearances for Operational airdrops IAW Op Directives. Maximum Surface Wind may be limited according to following parachutist in operational use.	K	Candidate	17
4.2	F	The System shall be deployed onto the DZ under specified sea state conditions	Up to and including Sea State 5 (Beaufort Scale).	Up to and including Sea State 6 (Beaufort Scale).		DDH / ODH may increase sea state clearances for Operational airdrops IAW Op Directives.	K	Candidate	18
4.4	F	The system should be re-useable during training after airdrop	80% serviceability of the LBAD System after recovery.	99.9% serviceability of the LBAD System after recovery.	To minimise through life costs and value for money. To provide enduring residual capability.	80% takes account for post use maintenance and replacement of single-use items.	K	Candidate	20
4.5	F	The System shall prevent any damage to the payload	No damage to payload 95% serviceability of the boat and 99.9% of all mission critical elements.	99.9% serviceability of the boat and all mission critical elements.	The system should not damage the payload due to LBAD platform structure or restraint mechanisms.	Payload should be serviceable upon derigging. User definition of serviceability is no mission critical damage to be sustained to the boat or stores / eqpt once de-rigged on the DZ.	K	Candidate	19
4.12	F	The System shall allow for the platform to sink after use (Ops Only)	Platform to sink without payload	As Threshold.	To meet capability CONEMP /CONUSE	Platform must sink to the seabed without trace after payload separation	K	Candidate	23

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Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
4.14	F	The System shall be capable of floating after use (Trg Only)	Platform to float up to 1 hour after payload release	Platform to float up to 4 hours after payload release	To aid recovery	Floating is defined as the whole platform on the surface of the water or buoyant at a depth of no more than 0.5m below the water surface.	K	Candidate	23
4.15	F	The system shall be locatable on the water's surface in all drop conditions (Trg Only)	Integration of a passive location aid	Integration of an active tracking location aid.	To aid platform recovery in training environments.		K	Candidate	23
4.17	F	The System shall be evaluated for mapping of ballistic load in case of failures.	Ballistic load data across the system weight ranges for the cleared despatch heights/altitudes to be determined for the following ballistic scenarios: a) Payload only b) Payload and platform together c) Platform only	As Threshold.	All AE are required to document ballistic load trajectories to determine safety areas for DZ calculation.	Ballistic data will be determined before T&E and evidenced during the trial phase.	K	Candidate	24

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
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5.1	N/F	The System shall be provided with all training information, material and media relating to its the safe operation and maintenance.	Training information pertinent to (1) Air Despatchers (2) ATLAS C Mk1 Crew (3) DZ Call signs (4) ADEI / Maintainers for the operation and maintenance of the system throughout its life, shall be produced IAW Def Stan 00-601 Part 3. Limited to [Official-Sensitive] - Security Information to be of a standard to develop a Train the Trainers Course delivered by the appropriate Authority representative.	As Threshold.	The System shall be provided with training information relating to the role of [Operator] and [Maintainer].	DO may be required to assist in development/delivery of a Train the Trainers Course for Maintenance of the LBAD System components. JSP822 Fully DSAT compliant courses to be determined by the TRG DLOD owner. The specific courses will be designed by JADTEU in conjunction with ATEC based on the supplied information and SQEP. Aircrew will be trained and training material produced iaw extant procedures through 206 Sqn and 24 Sqn TST	K	Candidate	26
5.4	N/F	The system shall provide training and information specific to DZ recovery. (TRG ONLY)	Training and information pertinent to DZ Recovery personnel IAW Def Stan 00-601 Part 3	As Threshold.	Ensure safe recovery procedures developed and applied to minimise	To include Contracted Recovery Services	K	Candidate	26

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					equipment damage during recovery				
5.5	N/F	The system shall provide training material and information specific to the parachutes utilised	Training Information pertinent to (1) Parachute Maintainers for the maintenance of all parachutes throughout their life, shall be produced IAW Def Stan 00-601 Part 3	As Threshold.	Parachute maintenance conducted by Contracted agency		K	Candidate	26
6.2	F	The System shall allow the user to design rigging schemes for future payloads without recourse to the DO.	Within a defined payload envelope. Up to the max capacity of the solution.	As Threshold.	To ensure Authority can test and evaluate future payloads & equipment for AD expeditiously. To allow for future, not yet designed, payloads & equipment to be airdropped on LBAD.	JADTEU will develop rigging schemes with user support.	K	Candidate	2
6.26	F	The System shall be maintainable by the Authority.	Provision of maintenance information and availability of spares to meet FLC commitments	As Threshold.	To meet capability CONEMP /CONUSE	None	K	Candidate	3
6.28	F	The System shall be maintainable by the Authority covering any 1st to 3rd Line maintenance activities.	1st to 3rd line maintenance at achievable at Main Operating Base (MOB)	1st to 3rd line maintenance at achievable at all locations	1st line: small repairs must be possible on deployment. 3rd line: repair activities to be carried out within AUTHORITY.	Any 4th Line repair will be referred to supplier.	K	Candidate	3

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6.31	F	The System shall sustain multiple descents.	Minimum of 30 descents when following documented Maintenance and Inspection procedures Single use equipment should be clearly identified within Technical Documentation	On condition	To meet capability CONEMP /CONUSE	Applicable to platform and ancillaries. Parachutes should adhere to current Authority Parachute Maintenance Policy. Equipment limitations due to saltwater exposure should be identified.	K	Candidate	20
HF-001	Personnel	The System shall accommodate personnel with body dimensions as defined in the ADE Target Audience Description (TAD), Ref: C17CSAE DT_ADE_TAD).	1. 90% of user population accommodated. - 5th percentile female - 95th percentile female. - 5th percentile male - 95th percentile male. - Whilst dressed in all clothing assemblies	1. 95% of user population accommodated. - 3rd percentile female - 97th percentile female. - 3rd percentile male - 97th percentile male. - Whilst dressed in all clothing assemblies	As stipulated in HFI Technical Guide 1.1: Anthropometry: People Size.	Provider to demonstrate and seek approval from the authority that there is sufficient consideration for Anthropometric requirements and that any risk is As Low as Reasonably Practicable (ALARP). The anthropometric data provided in HFI Technical Guide 1.1 (Appendix H - Table 21 and Table 22) should be referred to. System safety and/or mission success must not be compromised by the requirement to	K	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
						design for 90% (or even 95%) of the user population.			
HF-016	Personnel	The System shall provide sufficient space and clearances allowing access for maintenance and operational tasks, when both on-board and off the aircraft. Clearances shall consider anthropometric characteristics, clothing allowances and operation of tools.	1. 90% of user population accommodated. - 5th percentile female - 95th percentile female. - 5th percentile male - 95th percentile male. - Whilst dressed in all clothing assemblies	1. 95% of user population accommodated. - 3rd percentile female - 97th percentile female. - 3rd percentile male - 97th percentile male. - Whilst dressed in all clothing assemblies	The system needs to accommodate the user population. Maintenance and operational tasks need to be possible in different circumstances, i.e., on and off of the aircraft.	Solution Provider to demonstrate that there is sufficient consideration for Anthropometric requirements and that any risk is As Low as Reasonably Practicable (ALARP). Solution Provider to understand tools used and use of ancillary equipment. The anthropometric data provided in HFI Technical Guide 1.1 (Appendix H - Table 21 and Table 22) should be referred to in the first instance.	K	Candidate	31
HF-024	System Safety	The System shall maintain appropriate DZ landing processes, without risk of damage that may result in the presentation of hazards to personnel when conducting any payload derigging or recovery operations.	As stated,.	As Threshold.	Inappropriate/uncontrolled landing forces may result in the presentation of hazards to personnel.	Solution Provider to demonstrate that risk is As Low as Reasonably Practicable (ALARP).	K	Candidate	31

HF-033	System Safety	The System shall be designed to facilitate safe and efficient task completion when working at height, with appropriate means of access.	1. IAW BS EN ISO 14122 series. 2. 90% of user population accommodated: - 5th percentile female - 95th percentile female. - 5th percentile male - 95th percentile male. - Whilst dressed in all clothing - With consideration for equipment that may be carried on the person. 3. Minimising risk of falling while allowing for the mobility required for task completion (i.e. free use of both hands). 4. Consideration for the following but not limited to: - Use of anti-slip materials. - Use of guard-rails to prevent risk of personnel falling. - Going and rise of steps used. - Use of handrails. - Resistance to accumulation of liquid or other substances. - Security of the access method against movement. 5. Method of access for working at height to be demonstrated to be As Low as Reasonably Practicable (ALARP) by the supplier and agreed by the Authority.	As Threshold except 95% of user population accommodated. 1. 3rd percentile female - 97th percentile female. 2. 3rd percentile male - 97th percentile male. 3. Whilst dressed in all clothing assemblies	Safe and efficient access to boats is required when platforms are both on and off of the aircraft. There is a particular need to address access when on the aircraft due to concerns with current methodologies and a lack of opportunity for use of ancillary equipment.	The anthropometric data provided in HFI Technical Guide 1.1 (Appendix H - Table 21 and Table 22) should be referred to in the first instance. Solution Provider to identify equipment to demonstrate that risk associated with working at height is As Low as Reasonably Practicable (ALARP) during the rigging of the system. Solution Provider to identify processes and ancillary equipment to support the safe working at height when the system is on the ACHE and Aircraft to maintain ALARP mitigation	K	Candidate	31

Candidate Priority: The categories of System Requirement priority are characterised as follows:

Priority	Clarification
Key	A system requirement that is driven by a Key User Requirement. A KSR may not be traded below the Threshold without major implications for capability / project feasibility.
Mandatory	A system requirement, generally a User Constraint, designated as such for legal or safety reasons and which may not be traded.
Priority 1	Highest priority reflecting a primary system requirement that may drive design and/or cost and which may tolerate acceptable levels of risk to achieve the aim.
Priority 2	A secondary system requirement, which may have design and/or cost implications but will not tolerate project risk to achieve the aim.
Priority 3	Lowest priority reflecting a tertiary system requirement, which may have design implications but will not have cost implications and which will not tolerate project risk to achieve the aim.

Status: The status of System Requirements is characterised as follows:

Status	Meaning
Candidate	On first addition to the SRD, or re-instatement.
Traded	If the requirement is still valid but satisfaction is deferred indefinitely, typically as a consequence of trade-off activity.
Transferred	If relocated out of the SRD into another SRD, typically as a consequence of trade-off activity.
Cancelled	If no longer valid because the operational need has changed.

PART 3

System Requirements

24. There are currently 200 Candidate System Requirements (SRs) as outlined in the table below. Details of the verification methods for each SR are detailed in the LBAD Verification and Validation Requirement Matrix (VVRM)

Table 4: System Requirements

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
PREPARATION/CONSTRUCTION PHASE									
1.1	F	The system shall be capable of despatch from the Atlas C Mk 1	IAW Atlas C Mk1 RTS and LBAD AERC.	As Threshold.	iaw Project Mandate		K	Candidate	SSUN
1.2	F	The system shall be capable of despatch iaw the aircraft OEM certified methods	As an extracted load	As Threshold			K	Candidate	1
1.3	F	The system shall be capable of being despatched as up to 2 individual single or 2 sequential payloads	Single payload per LBAD platform on separate DZ passes	2 x payloads on individual LBAD platforms despatched in a single pass (sequential despatch)	To meet capability CONEMP/CONUSE		K	Candidate	1
1.4	NF	The System shall be capable of being held at a specified readiness state	Held in a partially ready to use rigged condition, with limitations on time spent in this condition (minimum of 28 days)	Held in a ready to use, rigged condition, for a defined period of time (minimum of 28 days)	To meet capability CONEMP/CONUSE	Contractor to provide an ORSS defining the servicing required while held at readiness	K	Candidate	4
1.5	F	The system shall be configured using standard equipment.	Using existing in-service equipment/ tools	As Threshold.	VfM to utilise existing equipment/tools.	ICD 001 - Standard Equipment	1	Candidate	Derived
1.6	F	The system shall be capable of despatch with following tailgate parachutist equipment	Compatible with parachutists following using the SL	As Threshold	BT380 is the only currently cleared parachute for water entry.	BT380 currently SL only, possible intent for FF in future	K	Candidate	1

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
1.7	F	The System shall have the capability to adapt the LBAD platform to interface with ALL selected payloads.	LBAD platform certified for all specified payloads as follows; Littoral Patrol Boat (LPB) Riverine Patrol Craft (RPC) Maritime Interdiction Craft (Medium) (MIC(M)) Maritime Interdiction Craft (Heavy) (MIC(H))	LBAD platform for all specified and future certifiable payloads.	An adaptable single platform capable across the spectrum of payloads provides maximum VfM for the Authority.	ICD 004 to 007 - Specific Payloads	K	Candidate	2
1.8	F	The System shall be serviceable after Depth Storage.	Maximum component shelf life. Post Depth Storage serviceability checklist.	Lifed on condition	Depth storage may involve de-construction and preservation activities.	Stored within supply stock conditions.	1	Candidate	5
1.9	F	The System shall be serviceable after DOB Storage.	Maximum defined period for DOB storage under specific climate conditions. Pre-use serviceability checklist.	Maximum defined period for DOB storage under adverse climate conditions.	Held at a specified readiness state, either rigged / unrigged. May be outside required climatically controlled environments		1	Candidate	5
1.10	F	The System shall be serviceable after MOB Storage.	Maximum shelf life of components. Pre-use serviceability checklist.	Lifed on condition	Held at a specified readiness state, either rigged / unrigged	Stored within the AD footprint at MOB ready to be ‘assembled’ and prepared for configuration	1	Candidate	5
1.11	F	The System shall be transportable as a complete system (with or without payload)	A complete system including all ancillary equipment.	As Threshold.	To provide flexibility in transportation in order to fully rig, install the system or recover from a location.	Post drop recovery from sea to shore is responsibility of the Authority	1	Candidate	6

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
1.12	F	The System shall be transportable in sub-elements to be re-constructed at the DOB.	Sub-element transportation and re-construction manual on any cargo capable aircraft.	As Threshold and any Authority determined means of transportation	It may not be possible to deploy all elements by the prescribed transport method within required timeframes. Or prepositioned elements may be utilised (e.g., parachutes etc)	Definition of sub-elements is at discretion of the supplier.	2	Candidate	6
1.13	F	The system shall provide a defined payload envelope.	Payload Mass: Maximum - 10000kg Minimum – 3000kg Platform Length Maximum -24 ft Minimum – 8 ft	As Threshold Maximum AUM of 16000 kgs	With a defined load envelope, the user can identify compatibility with future payload procurement and modifications, also to accommodate following parachutists when required.	A400M Limitation on max extracted payload	M	Candidate	2
1.14	F	The system shall remain within the Atlas C Mk 1 maximum height limitations for extracted loads	Complete system (with payload) to remain within published 'Tip-off' and 'wash-out' criteria Compliant with Airbus certified extracted load dimensions	As Threshold.	System shall not make contact with aircraft during extraction The A/C cargo compartment, Cargo Ramp & Door, A/C external components and role equipment must be safe from contact or damage from the deploying LBAD System	It is acknowledged that current published extracted load height criteria is restricted compared to cargo compartment height. A400M ICD provides details of why this is stated. Future extracted load trials **may** increase this height limitation.	M	Candidate	15

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
1.15	N/F	The System shall conform to the regulations for the transport of Dangerous Goods.	IAW legislative regulations for method of transportation.	As Threshold.	UK Authority must meet UK Legislation plus other worldwide legislation for the movement and handling of dangerous cargo.	Air – DGM v2.1 / IATA DGRs Road – ADR Rail – RID Sea - IMDG NATO - STANAG 4441 ALLIED MULTI-MODAL TRANSPORTATION OF DANGEROUS GOODS DIRECTIVE	M	Candidate	27
1.16	F	The System shall be capable of being lifted by a crane (with and without payload)	IAW JSP 800 Volume 3, Movement of Materiel Policy. Provision of bespoke LOLER approved lifting tackle (as required)	As Threshold.	To allow Strategic movement of Materiel		M	Candidate	7
1.17	F	The System shall incorporate lifting points.	Identified and marked lifting points compliant with Lifting Operations and Lifting Equipment Regulations 1998 (LOLER).	As Threshold.	Lifting activities will be involved as part of pre-positioning transportation, construction, pre-loading and DZ activities.		M	Candidate	7
1.18	F	The LBAD platform shall have the capability to be stacked for storage purposes.	Minimum of 3 x LBAD platforms to be stackable and stacking method will not produce undue stress on lower stacked platforms.	Maximum number of LBAD platforms to be stackable is identified and stacking method will not produce undue stress on lower stacked platforms.	Stacking is required for the storage of multiple LBAD platforms.	A suitably rated ‘racking' system could be considered. Must have security restraints. Platform must be compatible for any 'racking' and MHE. MHE information detailed in ICD 002 - MHE/ACHE	1	Candidate	5

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
1.19	F	The LBAD platform shall be capable of being manoeuvred utilising a forklift in an unrigged condition	Provision of dedicated forklift lifting channels, marked with maximum lifting capacity	As Threshold	Manoeuvring platform for storage and pre-construction activities		3	Candidate	5
1.20	F	The LBAD platform shall have the capability to be stacked for road transportation purposes.	Up to 2 LBAD platforms to be stacked and secured to meet road transport regulations	As Threshold.	Platforms could be configured as sub-components for transport. Expectation for recovery from a port back to MOB/DOB		2	Candidate	27
1.21	F	The System shall minimise storage space required within MOB and DOB locations	Minimal footprint possible for non-readiness systems	As Threshold.	Space becomes a premium within AD preparation areas. Ability to reduce footprint for systems not held at readiness will benefit daily AD activities.		K	Candidate	5

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
1.22	F	The System shall be transportable by Road.	1. In-Service Road transportation vehicles 2. Commercially contracted road transportation vehicles Deliver approved tie down schemes for the SYSTEM on HET, LET, MET and Flat Rack (where GVM, C of G and dimensions allow).	As Threshold.	To allow Strategic movement of Materiel 1. IAW JSP 800 Defence movements and transport regulation - volume 3 Movement of Materiel; 2. IAW [JSP 800 Volume 7 Load Safety Regulations and Tie Down Schemes.]. 3. Def-Stan 00-003: Design Guidance for The Transportability of Equipment, Section 2 Para 7 Road Transport;	For pre-positioning at a DOB iaw with Operational directives.	M	Candidate	27

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
1.23	F	The System shall be transportable by Rail.	Iaw Authority Rail transportation arrangements	As Threshold.	To allow Strategic movement of Materiel 1. IAW JSP 800 Defence movements and transport regulation - volume 3 Movement of Materiel; 2. IAW [JSP 800 Volume 8 Load Safety Regulations and Tie Down Schemes.]. 3. IAW Def-Stan 00-003: Design Guidance for The Transportability of Equipment, Section 2, Para 8 Rail Transport; 4. NATO AMOVP-4: Technical Aspects of the Transport of Military Materials by Railroad.	For pre-positioning at a DOB iaw with Operational directives.	3	Candidate	27
1.24	F	The System shall be transportable by Maritime transport.	1. Authority Maritime transportation vessels a) LPD b) LSD(A) c) Sealift RO-RO Ship 2. Commercially contracted maritime transportation	As Threshold.	To allow Strategic movement of Materiel IAW JSP 800 Defence movements and transport regulations - volume 3: Movement of Materiel;	For pre-positioning at a DOB iaw with Operational directives.	3	Candidate	27

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
1.25	F	The Complete System (rigged/unrigged) shall be strategically transportable by fixed wing A/C.	- Atlas C Mk1 - C17	any cargo capable aircraft.	To allow Strategic movement of Materiel 1. IAW DSA03 DLSR, Movement and Transport Safety Regulations, Dangerous Goods Manual (DGM), Version 2 and IATA regulations and; 2. IAW Defence Standard 00-003, Issue 6, Date: 28 February 2017, Design Guidance for the Transportability of Equipment.	For pre-positioning at a DOB iaw with Operational directives.	1	Candidate	27
1.26	F	The System shall be serviceable after transportation.	Provision of post transportation serviceability checklist	As Threshold.	Allow the user to carry out operations after Strategic movement of Materiel.	Ensures the system is in a serviceable condition post strategic transportation for documented system preparation	1	Candidate	27
1.27	F	The System shall be capable of transportation by air as an underslung load by Rotary Wing A/C.	HUSLE attachment capability enabling lift up to 10000kgs a distance of 10km.	HUSLE attachment capability enabling lift up to 11300kgs* a distance of 10km.	Tactical recovery within the Manoeuvre Space.	May be in rigged or unrigged condition. * CH47 underslung load limitation	2	Candidate	27
1.28	F	The System shall be compatible and fall within the operating envelope of existing in-service Mechanical Handling Equipment (MHE).	MHE at MOB and DOB up to maximum System mass.	As Threshold.	Enabling of system configuration and payload rigging. Lifting of complete system onto ACHE	MHE can include: Mobile cranes Fork Lifts Gantry Cranes ICD 002 - MHE/ACHE	1	Candidate	7

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
1.29	F	The System shall be capable of configuration (on a pre-prepared platform), from receipt of payload to ready for transport to A/C within a defined timeframe.	Each system prepared and rigged by 5 trained personnel within 8 hours from receipt of payload.	Each system prepared and rigged by 5 trained personnel within 5 hours from receipt of payload.	To facilitate planning and readiness schedules.	Payloads will need to pre-configuring before being mounted on the LBAD Platform	K	Candidate	9
1.30	F	The LBAD platform shall be capable of maintaining a configured serviceability for a defined timeframe.	6 months	Lifed on condition	A number of systems will be held at readiness as per Operational Directives	REME Construction and Pre-Drop Inspection Completed	1	Candidate	4
1.31	F	The System shall provide for securing the payload to the LBAD platform	IAW Atlas C Mk 1 payload restraint criteria Supplier is expected to utilise existing payload attachment points (LPB & RPC) and design for MIC (M & H) or may elect to design a single payload attachment interface for all craft	IAW EASA CS 25.561	The payload must be secured within the platform to meet the required restraint criteria for the A/C and ensure remains secure as required, through all stages of the LBAD deployment.	Limitations may differ to the published Def Stan 00-003 criteria. (MSP ratings for load attachment points given in Def Stan, no mention of Extracted Boat capabilities) There is precedence for ODH acceptance of risk to lower factors. Payloads expected to be fitted with specific restraint points to ensure the hull design is not a limiting strength factor. Littoral Patrol Boat (LPB). Riverine Patrol Craft (RPC) and Maritime Interdiction Craft (MIC M & H) attachment points are detailed within specific ICDs	K	Candidate	10

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
1.32	F	The System payload restraint shall be compatible with the payload attachment interfaces	PAC 28 restraint attachment points as detailed in ICD 004 ORC FCV in ICD 005 / Staccato (M & H) restraint attachment points as detailed in ICD 006 and 007	As per threshold	Restraint attachment points are determined by the hull strength to provide secure attachment.	A Contractor may propose a universal payload attachment point compatible with their restraint/release method but must utilise the existing attachment location and attachment bolt pattern.	1	Candidate	10
1.33	F	The System shall provide omni-directional strength-rated restraint attachment points, with identifiable SWL labels.	Def Stan 00-003 Ultimate strength of 44.48kN (10,000lbf) STANAG 7213	Ultimate strength of 111.21kN (25, 000lbf)	To ensure correct application of payload restraint to meet restraint criteria. Minimise number of restraint attachment points required	None	1	Candidate	10
1.34	F	The System shall include attachment points capable of accepting 2 restraint ‘devices’, applied in opposite directions.	Def Stan 00-003	As Threshold.	Flexibility to maximise restraint scheme for payload Minimise number of restraint attachment points required	None	1	Candidate	10

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
1.35	F	The System shall incorporate a payload specific airdrop cover	1. Bespoke Airdrop Payload cover, to ensure no hazards during despatch and deployment; 2. Capable of deck access during system rigging, installation and on DZ; 3. Capable of easy removal upon DZ 4. Incorporate any additional protection from AD equipment to payload equipment and instruments as required. 5. Quantities required: LPB x 6 RPC x 5 MIC (M) x 7 MIC (H) x 7	As Threshold	Winning LBAD Supplier will be required to engage with OEM and JADTEU on this element post Contract Award	Respective Payload ICDs will provide the payload silhouette for the payload cover. Payload cover will be required for Flight Trials. Airdrop payload cover shall not increase the maximum height of the payload exceeding the limitation for extracted loads	K	Candidate	11
1.36	F	The System shall define payload position criteria when fitting to the platform.	Defined envelope for lateral and longitudinal payload C of G position, identifying the maximum and minimum positions.	As Threshold	To define optimum loading position of payload to platform		K	Candidate	2
1.37	F	The System shall allow calculation of an overall C of G when fully rigged.	C of G calculable through suspension method.	As Threshold	System C of G is required for the Aircraft CLP and compliance with Aircraft W&B limitations	Appropriate lifting strops that meet LOLER 1998 must be used for calculating the total System C of G	M	Candidate	2
1.38	F	The System shall ensure the optimum bow-down angle is maintained during the payload descent.	Payload is suspended at optimum bow-down angle range throughout descent phase.	As Threshold	Ensures entry into water is controlled, increasing survivability of the payload.	Bow down angle range will be determined through the T&E phase for each payload.	K	Candidate	2

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
1.39	F	The system shall deploy without snagging on the payload during despatch and deployment phases.	Ensure that no components cause a snagging hazard during despatch and deployment sequences Supplier to work with Boat OEM to develop the airdrop payload cover	No additional processes for equipment removal upon payload water entry	Winning LBAD Supplier will be required to engage with OEM and JADTEU on this element post Contract Award	An airdrop compatible payload cover requires completion by Flight Trial commencement	2	Candidate	12
1.40	F	The system shall provide for mounting and securing descent parachutes during the installation and for the despatch phases	Bespoke to payload parachute tray	Universal payload fitting parachute tray	Parachutes need locating and securing during loading and initial deployment stages but require removal from payload to enable payload operation once in the water.	In collaboration with Payload OEM	1	Candidate	10
1.41	F	The system shall identify and provide any equipment required to support the construction and maintenance of the system	Identified Support and Test Equipment (STE) including numbers required, function and purpose, with supporting documentation for maintenance, operation, storage and calibration.	As per threshold	Authority conducting 1st-3rd Line maintenance will need appropriate support equipment	This may include support trestles, test equipment etc Authority may look to purchase these items as separate entities from the LBAD System	1	Candidate	3

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
INSTALLATION PHASE									
2.1	F	The System shall be installed onto the Atlas C Mk1 A/C within specific installation times.	Installation time of no more than 4 hrs for 2 x LBAD systems.	Installation time of no more than 3 hrs for 2 x LBAD systems.	Atlas C Mk1 cargo compartment is capable of fitting 2 x LBAD platforms (payload dependent) and allow for Crew & Parachutists. To maximise A/C availability and provide capability The impact of environmental conditions on load time is TBD.	Impact of environmental conditions during installation accepted as a variation factor. Installation begins from LBAD presented at Aircraft ramp.	1	Candidate	9
2.2	F	The System shall be capable of being winched into the aircraft utilising the onboard winch facility	Provision of suitably rated winching attachment points	As Threshold	Winching system into aircraft provides a greater degree of control during loading and minimises personnel increasing safety.	Identified winching attachment points on platform and within documentation	2	Candidate	9
2.3	F	The System shall be capable of installation with a specified number of AD personnel and 2 x WSOp(CM)	An AD Team consisting of: 1 x DCC 3 x AD Plus support team for transfer loader A/R	As Threshold	The WSOp(CM) are present for all AD loading and installation tasks. The number of AD personnel required to conduct all installation tasks including final checks.	It is accepted for qualification and training tasks this number will be greater.	1	Candidate	9

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
2.4	F	The installed mass of 2 complete LBAD Systems shall remain within Atlas C Mk1 Weight and Balance limitations.	Compliance with Atlas C Mk1 limitations: 1. Loading Limitations 2. Cargo Compartment limitations 3. MTOW/MLW/ZFW Limitations 4. A/C C of G Limitations	As Threshold.	The A/C safety and structural integrity is to be maintained at all times.	iaw TEA-A4-NT-210966-1 - Interface Requirements for Future Platforms	M	Candidate	SSUN
2.5	F	The System shall remain within individual roller conveyor running load limitations during loading and unloading operations.	3000 kg/m	As Threshold.	To protect the Roller conveyor from excessive line loading during the installation of platforms.	4-track roller configuration	M	Candidate	9
2.6	F	The System shall remain within individual roller conveyor running load limitations when installed.	1390 kg/m	As Threshold.	To protect the Roller conveyor from excessive line loading when installed.	4-track roller configuration	M	Candidate	9
2.7	F	The System shall permit the use of current Atlas C Mk 1 in-service restraint media for restraint of ancillary equipment.	As per DAP 101A-1101-1 (Iss 14 Dec 20)	As Threshold.	To allow VfM across multiple methods of restraint	Supplier may propose innovative restraint solutions which will be evaluated against through-life cost, practicality, and maintainability.	2	Candidate	10
2.8	F	The System shall be compatible with the Atlas C Mk 1 Cargo Handling System (CHS)	Platform interfaces with CHS locks and GRS	As Threshold.	Platform must be compatible with side rail and lock profiles	Atlas C Mk 1 is only cleared for 4-track roller configuration despatch of large Extracted Loads A400M documentation contains details of specific lock engagement profiles	K	Candidate	10

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Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
2.9	F	The System shall be restrained within the aircraft	IAW Def Stan 00-003.	EASA CS 25.561	In order to comply with the DEF STAN and EASA regulations for prove safe A/C operation.	EASA CS 25.561 applied to provide specific restraint criteria for Atlas C Mk 1 as detailed within the aircraft WBM.	M	Candidate	10
2.10	F	The System shall be compatible with in Service ACHE.	ACHE at MOB and DOB. Compatible with: 1. Transfer method (Roller trays) 2. Weight limitations 3. Dimensional limitations 4. Restraint to ACHE	As Threshold.	Reduce the requirement for specialist ACHE for loading LBAD only. Utilising extant ACHE at the DOB reduces the requirement for further specialist equipment per A/C load.	The equipment used to transfer the 'system' to the A/C. Currently this is the Atlas Mk 2A. (ICD 002)	K	Candidate	8
2.11	F	The System shall not prevent access to the payload deck area when attached to the LBAD platform.	Limited access to payload deck with payload cover fitted	No limitation of access to payload deck with payload cover fitted	To allow the user to access the payload deck area to attach operational equipment.	Some of the equipment used by the payload crews and boat passengers will only be available for fitting just before weighing and final AD safety checks. Any payload cover subject to the same access requirements.	2	Candidate	11

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
2.12	F	The system shall be adaptable to the craft collar inflation requirements	1. During loading the payload collar may be inflated or deflated according to payload size and limitations of the ACHE 2. Subject to payload limitations, collar may be capable of being inflated for despatch as part of the installation procedures	Payload arrives on DZ with collar fully inflated	An inflated payload collar reduces derig time on the DZ and improves payload survivability within higher sea sates	Collar inflation requires additional equipment on board the craft. ICD's detail the craft width with collar inflated, the ACHE limitations and the A400M despatch width limitations.	1	Candidate	9
DEPLOYMENT / AIRDROP PHASE									
3.1	F	The System shall allow the deployment of a single LBAD platform.	One LBAD platform deployed per pass.	As Threshold.	Flexibility in A/C utilisation or ability for single platform despatch for training or operational reasons.		K	Candidate	1
3.2	F	The System shall allow the deployment of two LBAD platforms.	One LBAD platform deployed per DZ pass or 2 differing DZ's	Two LBAD platforms sequentially deployed in a single DZ pass.	Ability to drop both LBAD platforms in sequence without having to airborne re-rig. Ability to drop one LBAD platform in one pass then the other LBAD platform on a second or alternate DZ		K	Candidate	1b
3.3	F	The System shall be able to despatch into water, worldwide.	In Visual Meteorological Conditions (VMC) day and night.	As Threshold.	To meet capability CONEMP/CONUSE		K	Candidate	1

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Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
3.4	F	The System shall be dimensioned to avoid clashes with A/C boundaries on deployment.	Compliant with Airbus certified extracted load dimensions.	As Threshold.	The A/C cargo compartment, Cargo Ramp & Door, A/C external components and role equipment must be safe from contact or damage from the deploying LBAD System	A400M ICD	K	Candidate	12
3.5	F	The System shall protect the A/C static line anchor cable on deployment.	No damage.	As Threshold.	The A/C static line anchor cables should not be damaged by deployment of LBAD.	Static Line Anchor Cables will be configured for both payload and troop despatch.	M	Candidate	12
3.6	F	The System shall be capable of despatch at specified A/C speeds.	A/C speeds in the range of 120kts - 140kts IAS (TBC after A/C Certification trials)	As determined from Airbus clearances	To determine A/C drop profiles	When parachutists are following, the parachutist despatch speed will be most limiting.	1	Candidate	15
3.7	F	The System shall not damage the A/C Roller conveyor in flight.	Roller limitations: The Systems shall not exert greater than 8KN dynamic load on the rollers.	As Threshold.	The system should not damage the rollers when installed and in-flight.		M	Candidate	12
3.8	F	The System shall be restrained safely in flight up to first movement.	Restrained to first movement IAW CS25.561	As Threshold.	Maintain all restraint until deployment sequence begins.	First movement is the point where the extraction process has begun and extractor parachute is deployed.	M	Candidate	10
3.9	F	The System shall not damage the A/C Rollers on deployment.	The extraction speed shall be no greater than 23m/s roller speed.	As Threshold.	As The System is extracted from the A/C, rollers must remain within capability limits.	Exceeding limitation may cause roller to ‘burn out’ and seize	M	Candidate	12

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3.10	F	The System shall be restrained in the Roller and Restraint System (RRS) in all directions before deployment.	As per the ATLAS C Mk1 WBM EASA CS25.561 STANAG 7213	As Threshold.	As requirement	The RRS provides restraint in X, Y & Z restraint directions	M	Candidate	10
3.11	F	The System shall not damage the A/C Guidance Rail System (GRS) before deployment.	Not to exceed X-lock load capacity according to the type of platform and published number of X-locks required in the A400M ICD	As Threshold.	Protection of the X-LOCKs and side restraint system which secure the load in the A/C	None	M	Candidate	12
3.12	F	The System shall not damage the A/C Guidance Rail System (GRS) on deployment.	No damage to GRS (including X-locks) during deployment.	As Threshold.	The X-locks are expected to provide the primary restraint and activation for deployment.	Force required to overcome X-locks and Number of X-locks used will be determined by System weight and extractor parachute.	M	Candidate	12
3.13	N/F	The System shall not exceed the A/C shear and bending moment limitations.	As published within the ATLAS C Mk1 WBM TLL1 Limitations	As Threshold.	To remain within A/C structural limitations	None	M	Candidate	Derived
3.14	N/F	The System shall not interfere with A/C emergency processes before deployment.	Minimum of 5.9 in (0.150 m) during loading and 7.87 in (0.200 m) during aerial delivery operations	As Threshold.	The A/C has specific smoke detection and rapid decompression facilities that are stated as geometric clearance requirements	None	M	Candidate	Derived

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Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
3.15	N/F	The System shall be airdropped to a defined accuracy.	All components of the LBAD system will land no more than 400yds (365m) from intended (Impact Point) IP. Following parachutists will be despatched after specific "T" time to RV with despatched boat	All components of the LBAD system will land no more than 200yds (183m) from intended IP. Following parachutists will be despatched after specific "T" time to RV with despatched boat	To meet capability CONEMP/CONUSE	"IP" is defined as the exact location where the boat is planned to land within the DZ. Safety separation between LBAD system and following Parachutists ("T" time) will be determined through T&E. This will vary according to wind conditions and drop profile.	K	Candidate	14
3.16	N/F	The System shall be capable of despatch from a specified range of altitudes.	LBAD system only: Min drop height 1000ft ASL Max drop height 8000ft PA	LBAD system only: Min drop height 750ft ASL Max drop height 12000ft PA	To meet capability CONEMP/CONUSE	Minimum drop altitude will be dictated by any following parachutists, parachute despatch limitations iaw AERC. Evidence will be required to support parachute deployment up to the maximum drop height	K	Candidate	13
3.17	F	The System shall allow positive identification of the payload, under canopy at all times of the descent.	Provision of visual aid.	Provision of integrated visual aids	Provides following parachutists visual aid to support boat RV and despatch safety.	Visual aids should meet Operational lighting considerations.	1	Candidate	16
3.18	F	The System shall allow positive identification of the platform, under canopy at all times of the descent.	Provision of visual aid.	Provision of integrated visual aids	Provides following parachutists visual aid to support despatch safety.	Visual aids should meet Operational lighting considerations.	1	Candidate	16

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3.19	F	The System shall permit the inclusion of Flight Data Monitoring (FDM) equipment	Ability to mount video FDM equipment	As Threshold plus provision for incorporation of Shock Load Sensors / Generic FDM equipment when required for Flight Trials	FDM in training and exercises provides vital evidence in development of equipment and any requirements within incident investigation.	The video equipment will be provided by the User, the system should be capable of allowing any equipment (e.g Go Pro, jump recorder) to be mounted as required by the User. FDM will be used for T&E activities.	1	Candidate	Derived
3.20	N/F	The Installed System shall allow sufficient space within the aircraft cargo compartment for parachutists and crewmembers.	Up to 2 AD and 1 WSOp(CM) plus minimum of 2 following parachutists for each payload	Up to 2 AD and 1 WSOp(CM) plus up to 16 following parachutists for each LBAD system despatched		It is accepted available space and following parachutist complement will be determined by the payload chosen for the task and despatch method.	1	Candidate	Derived
DROP ZONE PROCEDURES									
4.1	F	The System shall be deployed onto the DZ under specified wind conditions.	DZ surface wind considering height of canopy at touchdown: 25kts.	DZ surface wind considering height of canopy at touchdown: 30kts.	To ensure load can be received and derigged within operational parameters.	DDH / ODH may increase airdrop surface windspeed clearances for Operational airdrops IAW Op Directives. Maximum Surface Wind may be limited according to following parachutist in operational use.	K	Candidate	17
4.2	F	The System shall be deployed onto the DZ under specified sea state conditions	Up to and including Sea State 5 (Beaufort Scale).	Up to and including Sea State 6 (Beaufort Scale).		DDH / ODH may increase sea state clearances for Operational airdrops IAW Op Directives.	K	Candidate	18

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4.3	N/F	The System shall ensure a sequential LBAD can land within a cleared UK DZ boundary.	Sequential LBAD within the defined DZ boundary size for this operation.	As Threshold.	To ensure a suitably cleared DZ Size to meet capability.	DZ size will be calculated based upon LBAD ballistic data and mandatory DZ recce procedures, entered with the 1 Gp DZ Database	M	Candidate	14
4.4	F	The system should be re-useable during training after airdrop	80% serviceability of the LBAD System after recovery.	99.9% serviceability of the LBAD System after recovery.	To minimise through life costs and value for money. To provide enduring residual capability.	80% takes account for post use maintenance and replacement of single-use items.	K	Candidate	20
4.5	F	The System shall prevent any damage to the payload	No damage to payload 95% serviceability of the boat and 99.9% of all mission critical elements.	99.9% serviceability of the boat and all mission critical elements.	The system should not damage the payload due to LBAD platform structure or restraint mechanisms.	Payload should be serviceable upon derigging. User definition of serviceability is no mission critical damage to be sustained to the boat or stores / eqpt once de-rigged on the DZ.	K	Candidate	19
4.6	F	The System shall allow Users to derig the payload within a defined timeframe by day and night. (Ops Only)	De-rigging of Air Drop Equipment (ADE) on the water DZ achievable by 2 persons in less than 20 minutes	De-rigging of Air Drop Equipment (ADE) on the water DZ achievable by 2 persons in less than 10 minutes Quick release mechanisms over 'cutaway' items should be used	Upon arrival on DZ, payload will be required for operational use.	Derigging includes removal of any parachute tray components	1	Candidate	21

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4.7	F	The System shall allow Users to derig the payload within a defined timeframe by day and night. (TRG ONLY)	De-rigging of Air Drop Equipment (ADE) on the water DZ achievable by 2 persons in less than 20 minutes	De-rigging of Air Drop Equipment (ADE) on the water DZ achievable by 2 persons in less than 10 minutes Reusable and quick release mechanisms over 'cutaway' items should be used	Upon arrival on DZ, equipment will be re-utilised in further training events. Represent VfM in training	Derigging includes removal of any parachute tray components	1	Candidate	21
4.8	F	The System shall allow de-rigging of payload without the need for specialist tools on the DZ.	No specialist tools required to de-rig the payload.	As Threshold.	No specialist tools available on the DZ.	None	1	Candidate	21
4.9	F	The System shall be recoverable post deployment from a DZ in a rigged or derigged condition by a crane. (Trg Only)	Provision of lifting capability	As Threshold.	Post drop recovery operations to lift from the sea onto a suitable vessel	None	1	Candidate	20
4.10	F	The System shall be recoverable post deployment from a DZ in a rigged or derigged condition by a helicopter. (Trg Only)	Provision of lifting capability	As Threshold.	Post drop recovery operations to lift from the sea onto a suitable vessel or shore location.	None	3	Candidate	22
4.11	F	The system shall be capable to be towed to a safe location or port (Trg Only)	Provision of towing capability using platform extraction points.	As Threshold.	Post drop recovery operations to tow to a recovery vessel or shore location.	Expected that extraction and/or lifting ancillaries will be available for this purpose. Could also be towed to a supporting Landing Ships Docking Auxiliary (LSDA) or Amphibious Assault Ship	2	Candidate	22
4.12	F	The System shall allow for the platform to sink after use (Ops Only)	Platform to sink without payload	As Threshold.	To meet capability CONEMP/CONUSE	Platform must sink to the seabed without trace after payload separation	K	Candidate	23

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4.13	N/F	The System shall detail any environmental impact of prolonged exposure after sinking.	Details of saltwater exposure time and impact of materials on the marine environment	As Threshold.	Compliance with International Maritime Environmental Regulations (MARPOL Convention) and DSA02-DMR (DMR 501 - Environmental Damage) All marine environment hazardous materials to be identified	Platform may not be recovered for a long time due to nature of an operation.	M	Candidate	28
4.14	F	The System shall be capable of floating after use (Trg Only)	Platform to float up to 1 hour after payload release	Platform to float up to 4 hours after payload release	To aid recovery	Floating is defined as the whole platform on the surface of the water or buoyant at a depth of no more than 0.5m below the water surface.	K	Candidate	23
4.15	F	The system shall be locatable on the water's surface in all drop conditions (Trg Only)	Integration of a passive location aid	Integration of an active tracking location aid.	To aid platform recovery in training environments.		K	Candidate	23
4.16	N/F	The system shall be capable of being 'deck' located on a suitable size recovery vessel (Trg Only)	No requirement for additional platform supports when lifted onto a deck surface.	As Threshold.	Recovery Vessel may not have space for pre-configured loading area	System is expected to be craned onto the recovery vessel.	2	Candidate	22

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4.17	F	The System shall be evaluated for mapping of ballistic load in case of failures.	Ballistic load data across the system weight ranges for the cleared despatch heights/altitudes to be determined for the following ballistic scenarios: a) Payload only b) Payload and platform together c) Platform only	As Threshold.	All AE are required to document ballistic load trajectories to determine safety areas for DZ calculation.	Ballistic data will be determined before T&E and evidenced during the trial phase.	K	Candidate	24
4.18	F	The System shall minimise the necessity fo any recovery personnel to enter the water to aid platform recovery (Trg Only)	Minimal personnel required to conduct any recovery activity to enter the water Recovery operations should minimise the chances of any personnel becoming entangled increasing a risk to drowning.	No personnel to enter water for recovery operations	Personnel required to enter the water to affect any recovery operations will require a standard of swimming capability and associated safety equipment.		2	Candidate	23

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TRAINING / CURRENCY									
5.1	N/F	The System shall be provided with all training information, material and media relating to its the safe operation and maintenance.	Training information pertinent to (1) Air Despatchers (2) ATLAS C Mk1 Crew (3) DZ Call signs (4) ADEI / Maintainers for the operation and maintenance of the system throughout its life, shall be produced IAW Def Stan 00-601 Part 3. Limited to [Official-Sensitive] - Security Information to be of a standard to develop a Train the Trainers Course delivered by the appropriate Authority representative.	As Threshold.	The System shall be provided with training information relating to the role of [Operator] and [Maintainer].	DO may be required to assist in development/delivery of a Train the Trainers Course for Maintenance of the LBAD System components. JSP822 Fully DSAT compliant courses to be determined by the TRG DLOD owner. The specific courses will be designed by JADTEU in conjunction with ATEC based on the supplied information and SQEP. Aircrew will be trained and training material produced iaw extant procedures through 206 Sqn and 24 Sqn TST	K	Candidate	26

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5.2	N/F	The System shall provide a regular training capability that is always commensurate with the LBAD system operational capabilities.	Operational level training with 'live' currency of: 1. Air Despatchers: 6 Monthly 2. ATLAS C Mk1 Crew: 6 monthly 3. DZ Callsigns: Annually	As Threshold.	The training System must be identical to the operational System	Training should be achievable to ensure that all users can maintain correct levels of readiness to deploy LBAD iaw Readiness Orders and local instructions. There should be a minimum delta between a training and operational serial.	1	Candidate	25
5.3	N/F	The System shall facilitate currency and through life LBAD training utilising the CHT.	All LBAD equipment used for training to be the same as used on the A/C. Any bespoke CHT required training equipment to prevent inadvertent activations to be marked 'TRAINING USE ONY'	As Threshold.	Qualified LBAD SQEP will need to retain currency to allow an enduring capability. The CHT environment will not include the physical processes expected once platform is extracted. Solution may require training safety devices to prevent activation within the CHT training environment	CHT is same fidelity as the A/C, however additional Atlas C Mk1 hold trainers at Brize Norton are of a lesser fidelity but encompass the basics of the Cargo Handling System. Any LBAD training equipment should be equal fidelity to 'live' equipment. When conducting CHT training the user shall rely on no differences from procedures and equipment used on a 'live' aircraft LBAD task.	1	Candidate	26
5.4	N/F	The system shall provide training and information specific to DZ recovery. (TRG ONLY)	Training and information pertinent to DZ Recovery personnel IAW Def Stan 00-601 Part 3	As Threshold.	Ensure safe recovery procedures developed and	To include Contracted Recovery Services	K	Candidate	26

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					applied to minimise equipment damage during recovery				
5.5	N/F	The system shall provide training material and information specific to the parachutes utilised	Training Information pertinent to (1) Parachute Maintainers for the maintenance of all parachutes throughout their life, shall be produced IAW Def Stan 00-601 Part 3	As Threshold.	Parachute maintenance conducted by Contracted agency		K	Candidate	26
5.6	N/F	The System shall facilitate currency and through life training utilising the DMS.	LBAD procedures to be experienced within the DMS using integrated Airbus extracted load modelling.	As Threshold.	Aircrew currency may be achievable within the DMS environment.	DMS modelling will be configured following Large Extracted Load Clearance Trials by Airbus. DMS LBAD training activities may be conducted stand-alone or as a combined synthetic training serial with the CHT. Crew currency requirements will be IAW FLC training policy	2	Candidate	26
SUSTAINABILITY / ENVIRONMENTAL									
6.1	N/F	The System shall be stored in range of environmental conditions.	Compliance with Def Stan 00-035 Pt 4 Table 1 for Cat A1 to C3 inclusively.	As Threshold.	AUTHORITY is required to be compliant with Def Stan 00-035.		1	Candidate	5

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6.2	F	The System shall allow the user to design rigging schemes for future payloads without recourse to the DO.	Within a defined payload envelope. Up to the max capacity of the solution.	As Threshold.	To ensure Authority can test and evaluate future payloads & equipment for AD expeditiously. To allow for future, not yet designed, payloads & equipment to be airdropped on LBAD.	JADTEU will develop rigging schemes with user support.	K	Candidate	2
6.3	N/F	The System shall be operable within the Atlas C Mk 1 operating environmental limitations.	-54°C to +55°C OAT dependant on altitude	As Threshold	Atlas C Mk 1 RTS Figure B 2.1.1		M	Candidate	SSUN
6.4	N/F	The System design and operation shall not require any modification to the A/C.	IAW A/C build standard (aMUB / Batch 2*)	As Threshold.	Any modifications would be costly and outside the LBAD Project.		M	Candidate	Derived
6.5	N/F	The user shall be able to modify the system by DAOS/MAOS accredited organisations, with recourse to the DO/CDO, for approval to meet operational payload requirements.	IAW RA 5305 Issue 6	As Threshold.	An operational payload may require modifications (e.g parachute tray attachment) to develop a specific rigging scheme.	DO/CDO is expected to be involved in any modification process to maintain integrity of Certificate of Design.	3	Candidate	29
6.6	F	The System shall be suitable for transportation in a rigged condition.	Def Stan 00-003 Transportable by Air and Land	Def Stan 00-003 Transportable by Air, Land and Sea	This will reduce the burden on air and surface lines of communication.	For transportation of a rigged system, ancillary equipment may be stowed separately. This includes transport from rigging location to aircraft.	1	Candidate	27

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6.7	N/F	The System supplier shall comply with all Environmental Management Requirements.	Compliance with Def Stan 00-051	As Threshold.	AUTHORITY is required to be compliant with Def Stan 00-051	None	M	Candidate	28
6.8	N/F	The System shall comply with environmental requirements expected during service life.	Compliance with Def Stan 00-035 Part 3 and 4	As Threshold.	AUTHORITY is required to be compliant with Def Stan 00-035	None	M	Candidate	28
6.9	N/F	The System shall minimise the use of hazardous materials.	Hazardous substances minimised and any use justified	No hazardous substances used	Use of hazardous materials may require approval and additional monitoring activities. Any hazardous materials must be identified and documented	Hazardous substances would include use of cadmium plating COSHH Regs 2002	M	Candidate	28
6.10	N/F	The System shall withstand the anticipated vibration spectrum when transported as cargo by the ATLAS C Mk1.	Defence Standard 00-035 Part 5: Air Transportation: Chapter 2-03 Operation on Propeller A/C: Chapter 7-03	As Threshold.	Compliance with clearance for carriage on an ATLAS C Mk1	For strategic movement and airdrop serials	M	Candidate	28
6.11	N/F	The System shall withstand the anticipated vibration spectrum when transported as cargo by a jet A/C.	Defence Standard 00-035 Part 5: Air Transportation: Chapter 2-03 Operation on Jet A/C: Chapter 7-01	As Threshold.	Compliance with method of transportation vibration limitations	Strategic movement only	M	Candidate	28
6.12	N/F	The System shall withstand the anticipated vibration spectrum when transported as USL by a rotary A/C.	Defence Standard 00-035 Part 5: Air Transportation: Chapter 2-03 Operation on Rotary A/C: Chapter 8-01	As Threshold.	Compliance with method of transportation vibration limitations	Tactical movement within Manoeuvre space	M	Candidate	28
6.13	N/F	The System shall withstand the anticipated vibration spectrum	Defence Standard 00-035 Part 5:	As Threshold.	Compliance with method of	Strategic, pre-installation and post	M	Candidate	28

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		when transported as cargo by a wheeled vehicle.	Wheeled Vehicle transportation: Chapter 2-01 Mechanical aspects of Wheeled Vehicles: Chapter 6-02		transportation vibration limitations	drop recovery movement			
6.14	N/F	The System shall withstand the anticipated vibration spectrum when transported as cargo by rail.	Defence Standard 00-035 Part 5: Rail Transportation: Chapter 2-02	As Threshold.	Compliance with method of transportation vibration limitations	Strategic movement only	M	Candidate	28
6.15	N/F	The System shall withstand the anticipated vibration spectrum when transported as cargo by sea.	Defence Standard 00-035 Part 5: Sea transportation: Chapter 2-04	As Threshold.	Compliance with method of transportation vibration limitations.	Strategic movement only	M	Candidate	28
6.16	N/F	The System shall be capable of withstanding rapid /explosive decompression without causing a hazard to the A/C or A/C occupants.	At altitudes up to and including 40,000ft PA Def Stan 00-035 Part 3 Chapter 3-09, 3-21 and Part 4 Ch 10-01	As Threshold.	Def Stan 00-003 para 10.11	Both when non-operational (for transport) and when operational (for transit). To be included in Safety Assessment, Certificate of Design and operating parameters	M	Candidate	28
6.17	N/F	The System shall be resistant to fluid contamination.	The System is resistant to fluid contamination Def Stan 00-035 Part 3 Chapter 4-04, Part 4 Chapter 4-06 Chapter 8-01 Para 5	As Threshold.	Def Stan 00-035 Part 4 Chapter 4-06 and Chapter 8-01 Para 5	Fluid contaminants such as vomit, saliva, hydraulic oil, grease, cleaning solvents, aviation fuel and any other credible A/C liquid contaminants should be considered.	M	Candidate	28
6.18	N/F	The System shall be capable of use within a Saltwater environment	Prolonged exposure to water should not affect operation Def Stan 00-035 Part 4 Section 8	As Threshold	Def Stan 00-035 Part 4 Chapter 8-01 para 5 and 6	Procedures and limitations of components exposed to salt water	M	Candidate	28

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6.19	N/F	The System shall withstand the effects of humidity anticipated during worldwide operations.	The System is resistant to humidity Def Stan 00-035 Part 4 Chapter 4 and Part 3 Section 3 chapters 3-02, 3-06, 3-07, 3-13	As Threshold.	Def Stan 00-035 Part 4 Chapter 4	None	M	Candidate	28
6.20	N/F	The System shall be resistant to fungal growth, otherwise procedures shall be provided to prevent fungal growth.	System is resistant to fungal growth Def Stan 00-035 Part 3 Section 4 Chapter 4-01 and Part 4 Chapter 8-01 para 3	As Threshold.	Def Stan 00-035 Part 4 Chapter 8-01	None	M	Candidate	28
6.21	N/F	The System shall withstand a range of non-operational temperatures without damage or effect on subsequent performance.	-51°C to +71°C OAT non-operating temperature Def Stan 00-035 Part 3 Section 3 Chapters 3-01, 3-02, 3-04, 3-05, 3-06, 3-07	As Threshold.	Def Stan 00-035 Part 4 Chapter 2	Non-operational temperature range is to cover conditions the system may be exposed to during storage or transport. Def Stan 00-035 Part 4 Chapter 1-02 Table 1	M	Candidate	28
6.22	N/F	The System shall be serviceable after exposure to extreme conditions.	Continuous exposure to conditions for 12 hours. Def Stan 00-035 Part 3 Section 3 Chapters 3-01, 3-02, 3-04, 3-05, 3-06, 3-07	As Threshold.	Def Stan 00-035 Part 4 Chapter 2	For the System to be usable / re-usable in all operational conditions	M	Candidate	28
6.23	N/F	The System shall cause no electromagnetic interference to the A/C systems.	Compliance with Def Stan 59-411, Part 1 and 4	As Threshold.	Def Stan 59-411	None	M	Candidate	28
6.24	N/F	The System shall be unaffected by electromagnetic interference from the A/C systems.	Compliance with Def Stan 59-411, Part 1 and 3	As Threshold.	Def Stan 59-411	Any EMC related equipment within system will require additional E3 assessment evidence	M	Candidate	28

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Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
6.25	N/F	The System shall be corrosion resistant.	Compliance with Def Stan 21-005.	As Threshold.	Def Stan 21-005 Def Stan 00-035 Part 4 Chapter 4 and 8	None	M	Candidate	28
6.26	F	The System shall be maintainable by the Authority.	Provision of maintenance information and availability of spares to meet FLC commitments	As Threshold.	To meet capability CONEMP/CONUSE	None	K	Candidate	3
6.27	F	Maintenance schedules, instructions, operating procedures and cleaning procedures shall be provided for the system and identification of any associated tools.	Clear schedules, maintenance instructions, operating procedures and cleaning procedures are provided. IAW MAM-P	As Threshold.	To meet end user training and Command Acquisition Support Plan (CASP) delivery requirements Maintenance documentation should comply with MAM-D RA 1310 Issue 7	The supplier will provide technical documentation to contribute to the development of technical information iaw RA 4810 Issue 6	M	Candidate	3
6.28	F	The System shall be maintainable by the Authority covering any 1st to 3rd Line maintenance activities.	1st to 3rd line maintenance at achievable at Main Operating Base (MOB)	1st to 3rd line maintenance at achievable at all locations	1st line: Small repairs must be possible on deployment. 3rd line: repair activities to be carried out within AUTHORITY.	Any 4th Line repair will be referred to supplier.	K	Candidate	3

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6.29	F	The System shall be supported by a full Air System Document Set (ADS).	Information to support an Airborne Equipment Document Set (AEDS) development including: 1. DO Safety Assessment 2. Technical Data Certificate of Design (or equivalent) 3. Operating Manuals	As Threshold.	RA1310 Iss 7 Information will be formatted to provide Air Publications (AP's) and Air Transport Operations Manuals (ATOM's)	The supplier will be required to contribute information to support development of the AEDS iaw the LBAD ADS Management Plan Def Stan 02-040 (Currently Draft)	M	Candidate	29
6.30	F	Product Model Documentation shall be provided for the System.	Comprehensive Illustrated Parts Catalogue (IPC) and/or Product Model Breakdown iaw Def Stan 05-010 Pt 2 Issue 8	As Threshold.	Def Stan 05-010 Pt 2 Issue 8 MAM-D To facilitate through life spares provisioning	None	M	Candidate	29
6.31	F	The System shall sustain multiple descents.	Minimum of 30 descents when following documented Maintenance and Inspection procedures Single use equipment should be clearly identified within Technical Documentation	On condition	To meet capability CONEMP/CONUSE	Applicable to platform and ancillaries. Parachutes should adhere to current Authority Parachute Maintenance Policy. Equipment limitations due to saltwater exposure should be identified.	K	Candidate	20
6.32	F	The System shall demonstrate high reliability when in use.	System reliability of 98% during use	System reliability of 99.9% during use	The user should be able to rely on the system to meet operational objectives. Def Stan 00-040, 00-042	Supplier to provide component MTBF / FMEA / LORA evidence	M	Candidate	20

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6.33	F	The User shall be able to rely on serviceable LBAD systems to meet tasking and training requirements	System shall identify limited life components and provide a minimal maintainability requirement through design, supported with associated documentation. Complete a Maintainability Demonstration	As threshold plus minimised downtime between repair / preparation	Increased maintainability will impact the manpower and reduce system availability to meet operational tasking Def Stan 00-040, 00-042 and 00-045	Supplier to detail component life and inspection requirements. Some systems will be held at readiness states iaw Op Directives	M	Candidate	19
SAFETY									
7.1	N/F	The System shall be supported by the DO/CDO conducting all design activity IAW the Military Regulatory Publications (MRP) (e.g. DAOS approvals as per the MRP RA 5850 Issue 6).	DO to be able to Demonstrate competence for DAOS accreditation. To achieve accreditation within 6 months of Contract award. Including preparation of an exposition	DO is a DAOS organisation	To satisfy mandatory airworthiness protocols. To be delivered IAW the higher level MRP yet tailored to specific requirements as defined by the Authority.	The DO design and certification activities to be demonstrated to meet the requirements with the MRPs RA, specifically with respect to DAOS. (RA 1014 Issue 7 and RA 5850 Issue 6) Satisfy Release to Service Authority (RTSA) (Aircraft RTS - RA 1325 Issue 4) and Type Airworthiness Authority (TAA) (AERC - RA1345 Issue 3) approvals	M	Candidate	29

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7.2	N/F	The System shall meet recognised Safety Management Requirements	Def Stan 00-056 compliant safety assessment	As Threshold.	Def Stan 00-056 Part 1.	All Safety activity to be demonstrated to meet the intent of Def-Stan 00-056, including subordinate documents (e.g. Def-Stan 00-055 for Programmable Elements (PE)).	M	Candidate	30
7.3	N/F	The System shall meet recognised Configuration Management Requirements.	Compliance with Def Stan 05-057	As Threshold.	IAW Def Stan 05-057	Satisfy RTS, TAA approvals and gain an AERC. Satisfy Duty Holder (DH) acceptance of level of risk.	M	Candidate	30
7.4	N/F	The System shall meet specification standards acceptable to the Authority.	Appropriate Specifications applied, supported with evidence and approved by the Authority	Compliance with all specification and acceptance of evidence by the Authority	LBAD certification strategy to achieve AERC/RTS	Any specification standards applied to any element or the whole LBAD System will require identifying and supported with compliance evidence	M	Candidate	29
7.5	N/F	The System shall be accompanied with a Certificate of Design.	Certificate of Design / F100A	As Threshold.	RA 5103 Issue 5	All component shall also have associated Certificate of Design iaw the RA 5103 Issue 5	M	Candidate	29
7.6	N/F	System modifications shall be compliant with RA 5305 Issue 6 and approved by the Authority	Any modification compliant with RA 5305 Issue 6	As Threshold.	RA 5305 Issue 6	None	M	Candidate	29

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7.7	N/F	The System shall meet the applicable regulatory requirements of RA 1150 Issue 3	Compliance with: RA 1002 RA 1017 RA 1018 RA 1200 RA 1225 RA 1340 RA 1400 RA 1410	As Threshold.	RA 1150 Issue 3 is the applicable RA for Airborne Equipment and Airborne Forces	RA 1150 Issue 3 is not an exhaustive list of RA's required for compliance. Refer to the LBAD Regulatory Article Compliance Matrix for all applicable RA's	M	Candidate	29
7.8	N/F	The System shall achieve all requirements toward an Airborne Equipment Release Certificate (AERC).	Approved AERC	As Threshold.	RA1345 Issue 3	T&E activities will generate AERC recommendations.	M	Candidate	29
7.9	N/F	The system shall achieve an RTS for the ATLAS C Mk1 A/C	Approved RTS	As Threshold.	RA1325 Issue 4	The RTS limitations are the definitive limits for the system for the A/C type.	M	Candidate	29
7.10	N/F	The System shall mitigate all risks to a level at least as low as Tolerable and As Low As Reasonably Practicable (ALARP) within the control of the project and IAW an appropriate Accident Risk Tolerability Criteria.	All Accident Risks to be accepted by C17CSAE/A400M DT as ALARP. Satisfy Duty Holder (DH) acceptance of level of risk.	As Threshold.	C17CSAE/A400M DT to determine which Risk Tolerability Criteria to apply (platform, commodity or other).	None	M	Candidate	30

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7.11	N/F	The contractor shall maintain and provide design information to the delivery team TAA's.	Drawings and specifications necessary to define the configuration and design features of the air system.	As Threshold.	The TAA's needs to ensure through configuration management that the certified Type Design is defined, identified and controlled by drawings, specifications, manufacturing processes and Airworthiness limitations. IAW: RA 5103 Issue 5 RA 5305 Issue 6	C17CSAE DT and A400M DT TAA's	M	Candidate	29
7.12	N/F	The System designer is to establish and verify all safe operating limits and is to prepare a Written Scheme of Examination (WSE), or equivalent.	The System designer has established and prepared a WSE or equivalent. Iaw with appropriate legislation	As Threshold.	Applicable to any pressure vessels under PSSR 2000 and equipment regulated under LOLER 1998	None	M	Candidate	30
7.13	N/F	The system will provide the basis of the Maintenance Management System requirements for the system and equipment(s).	Provision of information to enable JAMES and MJDI population. Each and every component of the system is to be allocated a unique number. This number is to be used on all drawings and documentation.	As Threshold.	System equipment will be managed using JAMES and MJDI	None	M	Candidate	29

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7.14	N/F	The System DO shall provide information to support the Integrity Management of the system IAW RA 5726.	Provision of Integrity Management information compliant with RA and AE IM Policy	As Threshold.	AE Integrity Management Policy is documented, and system is expected to be included within this policy.	Integrity Management will include all data on 'life' of items in use and within storage.	M	Candidate	29
7.15	F	The System shall minimise hazards to the A/C or user through loose articles.	Loose article hazards are minimised and do not present a significant safety risk	No loose article hazards are present	Standard Aviation FOD practices	None	M	Candidate	30
7.16	F	The System shall protect against single point of failure (SPOF) during all phases of operation	No SPOF which lead to a direct safety related event i.e incident/accident.	No SPOF	Removal of any SPOF will support Design Safety Target	Historical evidence of SPOF regarding EFTC use.	M	Candidate	30
7.17	F	The System shall incorporate a secondary safety device to prevent extraction system malfunction and premature deployment of parachutes.	Provision of a secondary safety device	Provision of a certified secondary safety device	To protect the A/C and personnel against the effects of extraction malfunction or premature parachute deployment in flight	DO should provide all certification details and evidence of any secondary protection device used.	M	Candidate	30
7.18	N/F	The System shall ensure the scope of safety analysis shall include installation, operation, maintenance, storage and transportation of the system within the environments specified within this SRD and the standards referenced within this SRD.	DO Safety Assessment scope to cover all phases of operation as detailed in the AE Safety Management Plan	As Threshold.	A DO Safety Assessment is required to achieve an AERC	DO Safety Assessment will be utilised to inform the AESAR and ECRtL processes.	M	Candidate	29

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7.19	N/F	The System shall protect the A/C Design Safety Target (DST)	1 x 10^{-9} (based on Flying Hours)	As Threshold.	RA 1230 Issue 6	RA 1230 Issue 6 A/C DST is set across the range of activities and capabilities. Supplier will be expected to provide evidence how the system does not reduce this DST A/C Design Authority may accept a lower DST based upon supplier evidence and analysis	M	Candidate	29
7.20	N/F	The System shall meet the AE Design Safety Target (DST)	1 x 10^{-6} (based upon descents)	As Threshold.	RA 1230 Issue 6	None	M	Candidate	29
7.21	F	The System shall ensure any safety devices and/or safety indicators are accessible by operators during normal and emergency procedures.	System allows despatchers and WSOp (CM) to access safety devices and/or safety indicators during normal and emergency procedures.	As Threshold.	IAW Safety Management principles	None	M	Candidate	30
7.22	F	The System shall ensure any safety devices are clearly labelled and where applicable, tested prior to installation.	Identification of safety devices and pre-installation checks	As Threshold.	IAW Safety Management principles	None	M	Candidate	30
7.23	F	The System shall operate safely within the A/C pressurisation profiles	IAW ATLAS C Mk1 RTS	As Threshold.	A/C will fly pressurised profiles iaw with task objectives	None	M	Candidate	30
7.24	F	The System shall be resistant to inadvertent activation.	No possibility of inadvertent activation	As Threshold.	All activation devices should have recognised safety device installed to prevent inadvertent activation	System should not be able to be inadvertently activated during any stage of construction, installation and readiness for despatch.	M	Candidate	30

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7.25	F	The System shall be operable when operators wearing cleared operational clothing, including gloves	Cleared flying clothing	All military clothing	Clothing will be dictated by stage of the system process and operational requirements.	Cleared flying clothing for the ATLAS C Mk1 are listed in the RTS. For construction phases clothing is regulated iaw Military Clothing Catalogue	M	Candidate	30
7.26	N/F	The System shall use suitable and sustainable material to prolong system integrity and personnel safety.	System designed and properly constructed from suitable material to prevent any danger to personnel and to enable all necessary examinations required to ensure the prolonged integrity of the system to be undertaken.	System designed and properly constructed from suitable and sustainable material to prevent any danger to personnel and to enable all necessary examinations required to ensure the prolonged integrity of the system to be undertaken.	Information to be incorporated into the Integrity Management policy. Sustainability of materials should be highlighted.	None	M	Candidate	28
7.27	N/F	The System operation shall comply with all safety legislation.	Compliance with HSAW Act 1974 LOLER 1998 COSHH 2002 UK REACH Manual Handling Regulations 1992 SOLAS 1974 IMO Maritime Safety Regulations	As Threshold.	Authority must maintain compliance with safety legislation.	None	M	Candidate	30
INTEROPERABILITY									
8.1	F	The System shall be compatible for loading on A/C configured with a compatible 108in Cargo Handling System for 463L air cargo pallets.	As stated within the cargo hold dimension capability of A/C	As Threshold.	463L is a standard cargo pallet used on all military transport A/C	C17, C130J/-30 and Partner Nations (PN) A400M For Strategic air transportation purposes only	2	Candidate	32

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8.2	N/F	The System shall be interoperable with Partner Nations (PN) that operate the A400M.	Potential to AD LBAD from a PN A400M	PN Clearance to AD LBAD.	Identification of potential differences to AD LBAD from a PN A400M	System would be operated iaw with PN clearances aligned to UK Authority certifications.	3	Candidate	32
8.3	N/F	The System shall be assessed for AD compatibility with selected A/C types.	Assessment of compatibility with selected A/C.	Certification evidence of ability to AD LBAD from a selected A/C	Ability to AD from C17 as future potential	Ability to AD from C17 Assessment should identify any equipment restrictions or differences between A400M and other A/C types.	3	Candidate	32

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HUMAN FACTORS									
HF-001	Personnel	The System shall accommodate personnel with body dimensions as defined in the ADE Target Audience Description (TAD), Ref: C17CSAE DT_ADE_TAD).	1. 90% of user population accommodated. - 5th percentile female - 95th percentile female. - 5th percentile male - 95th percentile male. - Whilst dressed in all clothing assemblies	1. 95% of user population accommodated. - 3rd percentile female - 97th percentile female. - 3rd percentile male - 97th percentile male. - Whilst dressed in all clothing assemblies	As stipulated in HFI Technical Guide 1.1: Anthropometry: People Size.	Provider to demonstrate and seek approval from the authority that there is sufficient consideration for Anthropometric requirements and that any risk is As Low as Reasonably Practicable (ALARP). The anthropometric data provided in HFI Technical Guide 1.1 (Appendix H - Table 21 and Table 22) should be referred to. System safety and/or mission success must not be compromised by the requirement to design for 90% (or even 95%) of the user population.	K	Candidate	31

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HF-002	Personnel	The System shall be designed to accommodate the physical capabilities of the anticipated user population (as defined in the ADE TAD, Ref. C17CSAE DT_ADE_TAD).	1. IAW HFI Interim Technical Guide 1.4: Physical Capabilities: Section 1.4 – Lifting and Lowering Guidelines and Section 1.5 – Pushing and Pulling Guidelines. 2. IAW HFI Interim Technical Guide 1.4: Physical Capabilities: Section 1.5 – Pushing and Pulling Guidelines. 3. IAW HFI Interim Technical Guide 1.4: Physical Capabilities: Section 3.5: Posture and Work Capacity. 4. IAW Lifting and lowering guidelines - HSE's Manual Handling Operations Regulations 1992.	As Threshold.	People vary considerably in strength, flexibility and stamina and these differences must be accounted for in the design of the system.	The Solution Provider must assess their design against the HSE regulations. Where non-compliances are identified the provider must identify and propose suitable changes. Provider to demonstrate and seek approval that interaction with or operation of all interface controls/mechanisms are considerate of personnel physical capabilities.	M	Candidate	31
HF-003	Manpower	The System shall be operable and maintainable by the number of personnel and types of roles specified in the ADE TAD, without a need for change in responsibilities or workload	1. Compliant with the lowest number of personnel specified in the LBAD TAD. 2. Requiring no change in personnel roles, responsibilities or workload.	As Threshold.	To not impose greater demands on existing personnel or introduce a need for additional personnel.	Requirement to conduct workload assessment. This should utilise output from the Task Analyses also to be conducted.	1	Candidate	31

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HF-004	HFE	The System shall be designed to facilitate access to life-expired items without de-rigging.	1. 90% of user population accommodated. - 5th percentile female - 95th percentile female. - 5th percentile male - 95th percentile male. - Whilst dressed in all clothing assemblies 2. Life-expired items to be positioned in a location that is accessible without removal of cables or other elements. 3. IAW HFI Interim Technical Guide 1.4: Physical Capabilities: Section 1.4 - Lifting and Lowering Guidelines. 4. IAW Interim Technical Guide 3.6: Design for Maintainability and Supportability: Section 1.6: Unit Handling/Portability 5. IAW Lifting and lowering guidelines - HSE's Manual Handling Operations Regulations 1992.	As Threshold except: 1. 95% of user population accommodated. - 3rd percentile female - 97th percentile female. - 3rd percentile male - 97th percentile male. - Whilst dressed in all clothing assemblies	There is a need to have ready-rigged capabilities. To reduce manning requirement, it would be beneficial if life-expired elements on these capabilities could be removed without the need for derigging.		3	Candidate	31

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HF-005	Safety	The System shall be designed with consideration of task length and the relative position of maintainers at the beginning, during and end of a manual lift. This will determine the handling/weight limits, suitability of a manual lift, lifting method and also the shape and positioning of any supporting mechanisms such as handles.	1. IAW HFI Interim Technical Guide 1.4: Physical Capabilities: Section 1.4 - Lifting and Lowering Guidelines. 2. IAW Interim Technical Guide 3.6: Design for Maintainability and Supportability: Section 1.6: Unit Handling/Portability 3. IAW Lifting and lowering guidelines - HSE's Manual Handling Operations Regulations 1992.	As Threshold.	People vary considerably in strength, flexibility and stamina and these differences must be accounted for in the design of the system. Significant differences in physical capability are also found depending on the position in which somebody is in when lifting and also how close to the body a load is.	The Solution Provider must assess their design against the HSE regulations. Where non-compliances are identified the provider must identify and propose suitable changes. Solution Provider to demonstrate that associated risk is As Low As Reasonably Practicable (ALARP).	M	Candidate	31
HF-006	Safety	The System shall be designed to support appropriate lifting techniques and postures. This should minimise the need for personnel to stoop, twist their bodies, lift loads positioned away from the body, or lift loads above the shoulders.	1. IAW HFI Interim Technical Guide 1.4: Physical Capabilities: Section 1.4 - Lifting and Lowering Guidelines. 2. IAW HSE's Manual Handling Operations Regulations 1992.	As Threshold.	Adopting inappropriate postures, twisting and lifting loads positioned away from the body places additional strain on the body, increasing the likelihood of injury to personnel. Tasks can be changed through design, to minimise the need to adopt such inappropriate postures.	The Solution Provider must assess their design against the HSE regulations. Where non-compliances are identified the provider must identify and propose suitable changes. Solution Provider to demonstrate that associated risk is As Low As Reasonably Practicable (ALARP).	M	Candidate	31

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HF-007	Safety	The LBAD Platform shall be visible under all required environmental conditions, from the point of leaving the aircraft until landing in water. This shall be possible whilst ensuring requirements for battlefield inconspicuity are met.	1. Platform and ancillary devices shall be of a colour that facilitates detection by the naked eye, contrasting the background colour presented by environmental conditions. 2. Utilising detection devices that are permanently positioned where easily identified or utilise a deployment mechanism that allows devices to move position to where they would be easily identified.	As Threshold.	There is a concern that the platform may not always be visible during the descent phase, which could pose a risk to safety. Specific concerns have also been raised regarding the design, location and associated mechanisms for devices designed to ease detection during recovery (i.e. placement and deployment mechanisms of buoys).	The Solution Provider to understand requirements for visibility and battlefield inconspicuity.	1	Candidate	31

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HF-008	HFE	The System shall utilise labelling/markings to present the user with information needed for efficient, accurate and safe completion of tasks. Information shall be clear, meaningful, consistent, legible, discriminable and identifiable.	1. IAW HFI Interim Technical Guide 3.2: Information Presentation: Section 1.1 - Guiding Principles. 2. IAW HFI Interim Technical Guide 3.2: Information Presentation: Section 1.2 - Use of Colour. 3. IAW HFI Interim Technical Guide 3.2: Information Presentation: Section 1.3 - Coding. 4. IAW HFI Interim Technical Guide 3.2: Information Presentation: Section 1.4 - Symbols. 5. IAW HFI Interim Technical Guide 3.2: Information Presentation: Section 1.5 - Use of Text. 6. Addressing specific risks relating to, but not limited to: - Connection/securing of cabling - Maintenance activities - Differences in rigging of different capabilities. - Static line checks. - Prompts to mitigate risk of over-reliance on load markings.	As Threshold.	To mitigate risk of human error, through useful prompts that will enhance situational awareness and reduced mental workload.	Solution Provider to conduct Human Reliability Analyses (HRA) / Error analyses and report the results. This shall be demonstrated and approved by the Authority to be As Low as Reasonably Practicable (ALARP). Solution Provider to demonstrate that labelling/markings and interaction with or operation of all interface controls/mechanisms used on the System are appropriate for the lighting conditions experienced. Solution Provider to outline the rigging of different capabilities. Specific activities / tasks shall be communicated as well as differences dependent on the capability being rigged.	1	Candidate	31

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HF-009	Personnel	The System shall be designed to ensure that the colour of equipment, markings and labelling accommodates the visual characteristics of the anticipated user population (as defined in the LBAD TAD, Ref. C17CSAE DT_ADE_TAD).	1. IAW HFI Interim Technical Guide 3.2: People Characteristics: Sensory Capabilities and Communication: Section 5.8 - Seeing Colour and Luminance.	As Threshold.	Colour can be used to transfer meaningful safety and operational messages to personnel. It is, therefore, important that all personnel are capable of identifying such messages.	The colour perception characteristics of personnel, as defined by the PULHHEEMS medical taxonomy, shall be accounted for.	1	Candidate	31
HF-010	HFE	The System shall be designed to promote identification and understanding of operation through meaningful colour-coding of components (catches/latches and ancillary fittings) and use of appropriate labelling.	1. IAW HFI Interim Technical Guide 3.2: Information Presentation: Section 1.1 - Guiding Principles 2. IAW HFI Interim Technical Guide 3.2: Information Presentation: Section 1.2 - Use of Colour.	As Threshold.	To provide additional means of coding and transferring information, i.e. when checking catches are correctly locked/positioned during pre-despatch checks.	This may be considered critical information for operators and maintainers. Solution Provider to demonstrate that labelling/markings and interaction with or operation of all interface controls/mechanisms used on the System are appropriate for the lighting conditions experienced.	2	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-011	HFE	Where not controlled by compliance with relevant standards, markings and labels shall be appropriately designed, positioned and sized.	1. IAW HFI Interim Technical Guide 3.2: Information Presentation: Section 1.1 - Guiding Principles.	As Threshold.	To ensure that labels and markings are appropriately designed and positioned. This should ensure identification and understanding, and consequently facilitate information transfer.	The Solution Provider must assess their design against the HSE regulations. Where non-compliances are identified the provider must identify and propose suitable changes. Such markings/labelling may be considered critical information.	1	Candidate	31
HF-012	HFE	Information presented on markings and labels shall be clear, unambiguous and meaningful, utilising terminology and colour coding that the user population can be expected to be familiar with.	1. IAW HFI Interim Technical Guide 3.2: Information Presentation: Section 1.1 - Guiding Principles 2. IAW HFI Interim Technical Guide 3.2: Information Presentation: Section 1.2 - Use of Colour 3. IAW HFI Interim Technical Guide 3.2: Information Presentation: Section 1.3 - Alphanumeric Coding	As Threshold.	To ensure that labels and markings are appropriately designed and positioned. This should ensure identification and understanding, and consequently facilitate information transfer.	The Solution Provider must assess their design against the HSE regulations. Where non-compliances are identified the provider must identify and propose suitable changes. Such markings/labelling may be considered critical information.	1	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-013	HFE	The System shall be designed, so that the colours of labelling, markings and equipment are naturally presented and colour differentiation is possible (i.e. for colour coding) across differing lighting conditions.	1. IAW HSE's Lighting at Work Regulations 1997.	As Threshold.	The appearance of colours differs across lighting conditions and may be influenced by the chosen solution to workplace and task-based lighting. Lighting that does not affect the natural appearance of colours will be needed for visibility and interpretation of labels, markings and any colour-coded components that may be used.	It is acknowledged that there is little scope to change lighting in the A400M Atlas C Mk1 Aircraft.	M	Candidate	31
HF-014	Legislation	The System shall be designed to ensure safety markings are present and consistent with relevant legislation and regulations, where required.	1. IAW with relevant standards: - BS ISO 3864-1 / -4 - BS ISO 17398 - BS ISO 5499 - BS ISO 7000 2. IAW CRF: 1910.144 (2012)	As Threshold.	For compliance with relevant legislation and regulations and to protect personnel from safety risks.	The Solution Provider must assess their design against relevant British Standards that are referenced. Where non-compliances are identified the provider must identify and propose suitable changes. This may be considered critical information for operators and maintainers.	M	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-015	Personnel	The System shall be designed so that, where temporary lighting is used, personnel still have full-mobility and ability to complete the task as they would under optimum lighting conditions (i.e. free use of both hands). Lighting solutions shall also be considerate of and compatible with varying areas of use (e.g. during access under payload cover).	As stated.	As Threshold.	Task-based lighting that allows for intended completion of tasks in an effective and safe manner is required. This will promote safety and efficiency in task performance. Certain areas, such as access under the payload cover, are likely to be of most need of lighting solutions.	It is acknowledged that there is little scope to change lighting in the A400M Atlas C Mk1 Aircraft.	1	Candidate	31
HF-016	Personnel	The System shall provide sufficient space and clearances allowing access for maintenance and operational tasks, when both on-board and off the aircraft. Clearances shall consider anthropometric characteristics, clothing allowances and operation of tools.	1. 90% of user population accommodated. - 5th percentile female - 95th percentile female. - 5th percentile male - 95th percentile male. - Whilst dressed in all clothing assemblies	1. 95% of user population accommodated. - 3rd percentile female - 97th percentile female. - 3rd percentile male - 97th percentile male. - Whilst dressed in all clothing assemblies	The system needs to accommodate the user population. Maintenance and operational tasks need to be possible in different circumstances, i.e. on and off of the aircraft.	Solution Provider to demonstrate that there is sufficient consideration for Anthropometric requirements and that any risk is As Low as Reasonably Practicable (ALARP). Solution Provider to understand tools used and use of ancillary equipment. The anthropometric data provided in HFI Technical Guide 1.1 (Appendix H - Table 21 and Table 22) should be referred to in the first instance.	K	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-017	Environment	The System shall be designed to provide workplace and task-based lighting that allows for safe, effective and efficient working, checks and identification of the platform during recovery. Lighting shall promote visual comfort, efficiency in task completion, hazard identification and identification of labels/markings.	1. IAW HFI Interim Technical Guide 4.1: Working and Living Spaces, Section 3 – Workspace and Task Lighting. 2. IAW HFI Interim Technical Guide 4.1: Working and Living Spaces, Section 3 – Workspace and Task Lighting. Recommended lux levels are provided in Table 2. 3. IAW HSE's Lighting at Work Regulations 1997. 4. IAW CIBSE Code for Lighting 2002	As Threshold.	Appropriate lighting is required to protect personnel from hazards or potential hazards, reduce eyestrain and promote efficiency in task completion by easing identification of components/other elements of the system that are conducive to task performance. Compatibility with appropriate lighting solutions is also required to facilitate detection during recovery.	Workspace lighting may be provided by natural or artificial light, or a combination of both. It is acknowledged that there is little scope to change lighting in the A400M Atlas C Mk1 Aircraft. Compatibility with appropriate lighting solutions will, however, be essential for detection during recovery.	M	Candidate	31
HF-018	Environment	The System shall be designed to ensure minimal difference in the illuminance of the task area and adjacent areas.	1. IAW HFI Interim Technical Guide 4.1: Working and Living Spaces, Section 3 – Workspace and Task Lighting. 2. IAW HSE's Lighting at Work Regulations 1997. 3. IAW CIBSE Code for Lighting 2002 4. Illuminance ratios (comparison of task and adjacent area) no greater than 5:1.	As Threshold except: 1. Task-to immediate surround illuminance ratio: 3:1. 2. Task-to-general background illuminance ratio: 10.1.	Large differences in the illumination of the task and general wider area can pose a risk to safety. Such difference can also result in visual discomfort.	Workspace lighting may be provided by natural or artificial light, or a combination of both. It is acknowledged that there is little scope to change lighting in the A400M Atlas C Mk1 Aircraft. Temporary lighting and lighting used for detection during recovery shall	M	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
						consider the illuminance ratio.			
HF-019	Environment	The System shall be designed to minimise the potential for glare, flicker or reflectance.	1. IAW HFI Interim Technical Guide 4.1: Working and Living Spaces, Section 3 – Workspace and Task Lighting. 2. IAW HSE's Lighting at Work Regulations 1997. 3. IAW CIBSE Code for Lighting 2002	As Threshold.	Glare, flicker and reflectance can all pose a risk to safety and can also result in visual discomfort.	Particular consideration should be had for the environmental context (e.g. maritime environment) and the influence this may have in terms of reflectance.	M	Candidate	31
HF-020	Safety	The System shall be designed to mitigate any risk of trips, snags or body part entrapment, by ensuring that the size of openings, levels changes and positioning of equipment interfacing with the aircraft considers personnel of body dimensions as defined in the LBAD TAD (Ref. C17CSAE DT_ADE_TAD).	1. 90% of user population accommodated. - 5th percentile female - 95th percentile female. - 5th percentile male - 95th percentile male. - Whilst dressed in all clothing assemblies	1. 95% of user population accommodated. - 3rd percentile female - 97th percentile female. - 3rd percentile male - 97th percentile male. - Whilst dressed in all clothing assemblies	It is necessary to protect personnel from risk of entrapment and snagging or trip hazards that may emerge in this way. The presence of such will have safety implications and may reduce efficiency due to precautions that may be taken by personnel in response.	Any risk of tripping or snagging that may not be related to anthropometric characterises, should be demonstrated to be ALARP. The anthropometric data provided in HFI Technical Guide 1.1 (Appendix H - Table 21 and Table 22) should be referred to in the first instance.	1	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-021	HFE	The System shall be designed to promote safety and facilitate operator tasks by incorporating anti-slip material.	1. Anti-slip surfaces shall be used in all areas in which personnel can be expected to operate on the platform. This shall be assessed in accordance with and comply with values outlined in HSE Technical Sheet "Assessing the slip resistance of flooring" (2012): - Compliance with HSE Pendulum Test Value (PTV) for 'low slip potential': PTV = 36+ - In water-contaminated conditions, compliance with HSE surface microroughness (Rz) for 'low slip potential' = 20 + µm.	As Threshold.	The system needs to be usable in a range of environmental conditions, including during inclement weather.	The Solution Provider must assess their design against the HSE regulations. Solution Provider to demonstrate that the risk of slipping is As Low as Reasonably Practicable (ALARP).	1	Candidate	31
HF-022	HFE	The System shall be designed to ensure that sharp edges/corners are avoided.	As stated,	As Threshold.	It is necessary to protect personnel from risk of injury from hazards. The presence of such hazards will have safety implications and may reduce efficiency due to precautions that may be taken by personnel in response.	Solution Provider to demonstrate that risk is As Low as Reasonably Practicable (ALARP).	1	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-023	HFE	The System shall ensure that the System is resilient to damage and able to withstand use from typical activities and actions of personnel.	1. Protecting against elements of the System being ripped or torn. 2. Protecting against elements of the System becoming frayed or worn. 3. Protecting payload from damage that may otherwise harm personnel.	As Threshold.	Components should be able to withstand required use, to mitigate risk of damage and the potential consequence of injury to personnel (i.e. through contact with frayed, worn or otherwise broken equipment).		M	Candidate	31
HF-024	System Safety	The System shall maintain appropriate DZ landing processes, without risk of damage that may result in the presentation of hazards to personnel when conducting any payload derigging or recovery operations.	As stated,	As Threshold.	Inappropriate/uncontrolled landing forces may result in the presentation of hazards to personnel.	Solution Provider to demonstrate that risk is As Low as Reasonably Practicable (ALARP).	K	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-025	HFE	The System shall be designed to ensure handles are fitted to heavy equipment or assembly that requires manual lifting.	1. Loads >20 kg and <60 kg - IAW HFI Interim Technical Guide 3.6: Design for Maintainability and Supportability: Section 1.6: Unit Handling/Portability	1. Loads >10 kg and <60 kg - IAW HFI Interim Technical Guide 3.6: Design for Maintainability and Supportability: Section 1.6: Unit Handling/Portability	This will promote personnel safety, efficiency in task performance that requires manual lifting and reduce the likelihood of damage to equipment.	Loads in excess of 60 kg require a mechanical lifting attachment - As stipulated in HFI Interim Technical Guide 3.6: Design for Maintainability and Supportability: Section 1.6: Unit Handling/Portability. This requirement may be relaxed following submission of a robust justification to the HFI Focus. Solution Provider to comply with HSE's Manual Handling Operations Regulations 1992.	M	Candidate	31
HF-026	HFE	The System shall be designed to ensure handles used for lifting equipment are designed in accordance with HFI Interim Technical Guide 3.6: Equipment: Design for Maintainability & Supportability.	1. HFI Interim Technical Guide 3.6: Design for Maintainability and Supportability: Section 1.6: Unit Handling/Portability	As Threshold.	This will promote personnel safety, efficiency in task performance that requires manual lifting and reduce the likelihood of damage to equipment.	This requirement may be relaxed following submission of a robust justification to the HFI Focus. Solution Provider to comply with HSE's Manual Handling Operations Regulations 1992.	M	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-027	System Safety	The System shall be designed to be compatible with Mechanical Handling Equipment in a way that minimises risk of equipment damage and injury to personnel.	1. Presenting with easily identifiable disconnection points that are accessible up to sea state three. 2. Allowing for minimal need for personnel entry into water during any recovery. 3. Compliance with the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER).	As Threshold except: 1. Up to sea state five.	To ensure secure handling when using Mechanical Handling Equipment, reducing risk of equipment damage and/or personnel injury. It is also important to facilitate activity and minimise risk associated with using connection points, prior to the mechanical lift.		M	Candidate	31
HF-028	HFE	The System shall be designed so that the platform can be stored in a safe and space-efficient manner.	As stated.	As Threshold.	Inappropriate storage solutions could be a risk to personnel safety.	Solution Provider to provide guidance for safe storage.	2	Candidate	31

HF-029	HFE	The System shall be designed to provide sufficient, secure and easily accessible storage space for ancillary equipment.	1. 90% of user population accommodated. - 5th percentile female - 95th percentile female. - 5th percentile male - 95th percentile male. - Whilst dressed in all clothing assemblies 2. Appropriate storage and securement of all equipment, mitigating risk of loose components that may otherwise be prone to acting as tripping or snagging hazards. 3. Providing guarding or control devices to mitigate risk of damage from snagging. 4. Content that is used together to be grouped/stored in a similar location. 5. Content to be stored so that the criticality or frequency in which content is used is associated with ease of access. 6. Compliance with manual handling requirements. 7. Any specific stowage requirements associated with specific items.	As Threshold except: 1. 95% of user population accommodated. - 3rd percentile female - 97th percentile female. - 3rd percentile male - 97th percentile male. - Whilst dressed in all clothing assemblies	To minimise the potential of injury to personnel or damage to equipment, storage space should be available to allow for suitable stowage of all required ancillary equipment. This also minimises the likelihood of loose articles associated with stowage on the person - which may result in injury, equipment damage or loss.		1	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-030	System Safety	The System shall be designed so that safety equipment is positioned in an accessible location forward of any platform on the aircraft.	As stated.	As Threshold.	Depending on the positioning of equipment, there is the risk that personnel may be required to perform operations that involve going behind a live load (a live load that has malfunctioned/'jammed'). To minimise the likelihood of this, safety equipment should be positioned forward of any load.		1	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-031	Environment	The System shall be designed to ensure that, when exposed to certain environmental conditions, the surface temperature of the platform and specific interfaces does not reach levels that pose a risk to safety or comfort.	1. Minimising potential for harm, with consideration of human responses to cold/hot surfaces IAW: - BS EN ISO 13732-1:2008: Ergonomics of the thermal environment. Methods for the assessment of human responses to contact with surfaces. Hot surfaces. - BS EN ISO 13732-3:2008: Ergonomics of the thermal environment. Methods for the assessment of human responses to contact with surfaces. Cold surfaces.	As Threshold.	The system needs to be usable in a range of environmental conditions.	Recognising the following elements: - Surfaces that can be touched. - Surface material. - Intentional and unintentional touching. - Frequency of intentional touching. - Probability of unintentional touching. - Duration of contact. - Contact area. - Contract force. It is recognised that this requirement may not be feasible due to implications such as weight. If deemed unsuitable, this requirement can be removed and PPE will be used as the sole preventative factor.	3	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-032	HFE	The System shall be designed to ensure that the force required to operate mechanisms/controls remains the same, regardless of environmental conditions experienced.	1. Operating mechanisms/controls remain the same or similar with exposure to environmental conditions. 2. Compliance with force capacity limits outlined in BS EN 1006-3:2002+A1:2008 "Safety of machinery - Human Physical Performance" - Part 3 - "Recommended force limits for machinery operation" - Table 1. 3. Environmental considerations include but are not limited to: - Heat. - Cold. - Water exposure. 4. Force and operation to be demonstrated by the Contractor and agreed as appropriate by the authority.	As Threshold.	Controls/mechanisms need to be easily operated at all times, despite environmental conditions.	Solution Provider to demonstrate or provide evidence of force requirements associated with operating mechanisms/controls under different environmental conditions.	M	Candidate	31

HF-033	System Safety	The System shall be designed to facilitate safe and efficient task completion when working at height, with appropriate means of access.	1. IAW BS EN ISO 14122 series. 2. 90% of user population accommodated: - 5th percentile female - 95th percentile female. - 5th percentile male - 95th percentile male. - Whilst dressed in all clothing - With consideration for equipment that may be carried on the person. 3. Minimising risk of falling while allowing for the mobility required for task completion (i.e. free use of both hands). 4. Consideration for the following but not limited to: - Use of anti-slip materials. - Use of guard-rails to prevent risk of personnel falling. - Going and rise of steps used. - Use of handrails. - Resistance to accumulation of liquid or other substances. - Security of the access method against movement. 5. Method of access for working at height to be demonstrated to be As Low as Reasonably Practicable (ALARP) by the supplier and agreed by the Authority.	As Threshold except 95% of user population accommodated. 1. 3rd percentile female - 97th percentile female. 2. 3rd percentile male - 97th percentile male. 3. Whilst dressed in all clothing assemblies	Safe and efficient access to boats is required when platforms are both on and off of the aircraft. There is a particular need to address access when on the aircraft due to concerns with current methodologies and a lack of opportunity for use of ancillary equipment.	The anthropometric data provided in HFI Technical Guide 1.1 (Appendix H - Table 21 and Table 22) should be referred to in the first instance. Solution Provider to identify equipment to demonstrate that risk associated with working at height is As Low as Reasonably Practicable (ALARP) during the rigging of the system. Solution Provider to identify processes and ancillary equipment to support the safe working at height when the system is on the ACHE and Aircraft to maintain ALARP mitigation	K	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-034	Health Hazards	The System shall be designed to minimise personnel exposure to potentially hazardous materials that may act as an irritant or cause illness to personnel.	1. In recognition of all Operations and Maintenance tasks, as recognised in the Accepted Contractor Task Analysis. 2. To include consideration of, but not limited to: - Cadmium. - Grease. - Joining compound. - Adhesive. - Trimagard. - Loctite. - Tufnol. - Lotoxane. - Aluminium putty. 3. Where applicable, exposure to be IAW Control of Substances Hazardous to Health (COSHH) Regulations 2003). 4. Exposure and risk of irritants or injury to personnel to be demonstrated to be As Low as Reasonably Practicable (ALARP) by the supplier and agreed by the Authority.	As Threshold.	To enable the users to operate and maintain the LBAD system without risk of irritants or illness caused by exposure to certain materials.		M	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-035	HFE	The System shall be designed to minimise personnel risk during transportation, fitment, securing, stowage and retrieval of parachutes.	1. IAW HFI Interim Technical Guide 1.4: Physical Capabilities: Section 1.4 – Lifting and Lowering Guidelines and Section 1.5 – Pushing and Pulling Guidelines. 2. IAW HFI Interim Technical Guide 1.4: Physical Capabilities: Section 1.5 – Pushing and Pulling Guidelines. 3. IAW HFI Interim Technical Guide 1.4: Physical Capabilities: Section 3.5: Posture and Work Capacity. 4. IAW Lifting and lowering guidelines - HSE's Manual Handling Operations Regulations 1992. 5. Minimising risk of exposure/collision with boat propellers.	As Threshold.	Retrieval of platform parachutes needs to promote safe handling whilst mitigating against known risks such as parachutes getting caught in boat propellers.	Solution Provider to identify processes and any equipment that promotes the safe handling of parachutes on all occasions and remains ALARP.	M	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-036	HFE	The System shall be designed to be compatible with existing transportation facilities and methodologies. Compatibility shall ensure the System is capable of withstanding such methods, without risk of damage.	1. Where access is required in transportation facility, 90% of user population accommodated. - 5th percentile female - 95th percentile female. - 5th percentile male - 95th percentile male. - Whilst dressed in all clothing assemblies 2. With consideration of design elements to prevent/withstand potential damage that may present as hazards to personnel. 3. With consideration for access, spatial constraints and the use of tools.	As Threshold except: 1. 95% of user population accommodated. - 3rd percentile female - 97th percentile female. - 3rd percentile male - 97th percentile male. - Whilst dressed in all clothing assemblies	To facilitate transportation and mitigate risk of equipment damage.	The anthropometric data provided in HFI Technical Guide 1.1 (Appendix H - Table 21 and Table 22) should be referred to in the first instance.	1	Candidate	31

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-037	HFE	The System shall be designed to both minimise ingress of debris and facilitate cleaning.	1. 90% of user population accommodated. - 5th percentile female - 95th percentile female. - 5th percentile male - 95th percentile male. - Whilst dressed in all clothing assemblies 2. Openings designed to minimise risk of debris ingress. 3. Openings considerate of cleaning equipment/tools used, allowing for those in which will allow for those that will reduce required manpower whilst ensuring thorough cleaning. 4. Materials resilient to cleaning equipment/tools used, allowing for those in which will allow for those that will reduce required manpower whilst ensuring thorough cleaning. 5. Materials resilient to damage through exposure to debris.	As Threshold except: 1. 95% of user population accommodated. - 3rd percentile female - 97th percentile female. - 3rd percentile male - 97th percentile male. - Whilst dressed in all clothing assemblies	To minimise the manpower required for cleaning of the System. Minimising or ensuring resilience to debris will also mitigate the risk of equipment damage.	The anthropometric data provided in HFI Technical Guide 1.1 (Appendix H - Table 21 and Table 22) should be referred to in the first instance.	1	Candidate	31

HF-038	HFE	The System shall present alerts/alarms through the most appropriate sensory modality, or through a combination if this best allows personnel to perform tasks.	1. IAW Defence Standard 02-599 'Policy Requirements and Design Guidance for Alarm and Warning Systems'. 2. IAW existing Alert / Alarm Philosophies used in the wider operational context, where these do not contravene Human Factors best practice. 3. Recognising the influence of colour, colour coding and redundancy coding IAW with HFI Interim Technical Guide 3.2: Information Presentation: Section 1.2 - Use of Colour and Section 1.3 - Coding. 4. IAW with the design, selection and assessment of auditory signals outlined in HFI Interim Technical Guide 3.2: Information Presentation: Section 1.6 - Auditory Information Presentation. 5. In recognition of the wider auditory environmental conditions and the influence this can have on identification and detection of alerts or alarms.	As Threshold.	To ensure that the information presented to the user considers the most appropriate modality (visual, auditory or haptic) for the information presented in alerts or alarms.	The Solution Provider is required to develop an Alert / Alarm Philosophy, which will drive the design of the System in a way that ensures alerts or alarms are identifiable, distinguishable and appropriate to the response required.	1	Candidate	31

HF-039	HFE	The System shall present alerts or alarms to provide personnel with required information needed to maintain awareness of System status. Such alerts or alarms shall be designed to be easily detected and identified, in accordance with an approved Philosophy.	1. IAW Defence Standard 02-599 'Policy Requirements and Design Guidance for Alarm and Warning Systems'. 2. IAW existing Alert / Alarm Philosophies used in the wider operational context, where these do not contravene Human Factors best practice. 3. Recognising the influence of colour, colour coding and redundancy coding IAW with HFI Interim Technical Guide 3.2: Information Presentation: Section 1.2 - Use of Colour and Section 1.3 - Coding. 4. IAW with the design, selection and assessment of auditory signals outlined in HFI Interim Technical Guide 3.2: Information Presentation: Section 1.6 - Auditory Information Presentation. 5. In recognition of and controlling against the risk of user control on presentation having a detrimental impact in terms of identification and detection of alerts or alarms. 6. In recognition of the wider auditory environmental conditions and the influence this can have on identification and	As Threshold.	To ensure that alerts or alarms used as part of the Extraction System (i.e. with a Control Box) are easily detected and identified, prompting a suitable response by personnel.	The Solution Provider is required to develop an Alert / Alarm Philosophy, which will drive the design of the System in a way that ensures alerts or alarms are identifiable, distinguishable and appropriate to the response required.	1	Candidate	31

			detection of alerts or alarms.						

RBS ID	Type	System Requirements	Measure of Performance (MoP)		Justification	Remarks	Priority	Status	UR Link
Unique Identifier	F-NF	SMART	Measure, **THRESHOLD**, Normal, Extended, Exceptional conditions	Measure, **OBJECTIVE**, Normal, Extended, Exceptional conditions	Additional reference / reasoning for requirement		Key, Mandatory, 1, 2 OR 3		
HF-040	HFE	The System shall utilise control measures (e.g. guarding) to prevent inadvertent activation of controls, switches and mechanisms or inadvertent impact with equipment - particularly that identified as safety critical.	1. IAW with conducted Human Reliability Analyses / Error Analyses. 2. IAW BS EN 894 series 'Safety of Machinery. Ergonomics Requirements for the Design of Displays and Control Actuators'.	As Threshold.	To prevent inadvertent activation of controls, switches or mechanisms. If many cases, if inadvertent activation were to arise, there is likely to be a detrimental impact in terms of personnel safety and/or equipment damage.	The Solution Provider is required to develop an Alert / Alarm Philosophy, which will drive the design of the System in a way that ensures alerts or alarms are identifiable, distinguishable and appropriate to the response required.	M	Candidate	31

Context Documents

References

Reference
1. The Large Boat Aerial Delivery (LBAD) capability from the Atlas C Mk 1 URD v1.9
2. Annex A to URD v1.9 – LBAD Vignette
3. Outline Business Case for Large Boat Aerial Delivery (LBAD) - Cat C
4. Project Management Plan (PMP) For LBAD
5. LBAD Commercial Strategy v0.2
6. LBAD MDAL V1.0 Aug 22

Glossary of Abbreviations and Terms

Glossary of Abbreviations.

Acronym	Meaning	Acronym	Meaning
A/C	Aircraft	LPB	Littoral Patrol Boat
ACHE	Air Cargo Handling Equipment	MAB	MOD A Block
AD	Aerial Delivery	MDAL	Master Data Assumptions List
ADE	Aerial Delivery Equipment	MHE	Manual Handling Equipment
ADEI	Aerial Delivery Equipment Inspector	MIC	Maritime Interdiction Craft
AE	Airborne Equipment	MOB	Main Operating Base
AERC	Airborne Equipment Release Certificate	NS	National Standby
AESAR	Airborne Equipment Safety Assesment Report	ODH	Operational Duty Holder
ASL	Above Sea Level	OEM	Original Equipment Manufacturer
AT	Air Transport	ORSS	Operational Readiness Serviceability State
ATEC	Air Test and Evaluation Centre	OSD	Out of Service Date
C17CSAE DT	C17 Combat Support and Airborne Equipment Delivery Team	PA	Pressure Altitude
CDO	Co-ordinated Design Authority	RPC	Riverine Patrol Craft
CHS	Cargo Handling System	RTS	Release to Service
CLP	Cargo Load Program	RTSA	Release to Service Authority
CofD	Certificate of Design	SQEP	Suitably Qualified and Experienced Person
CONEMP	Concept of Employment	SPOF	Single Point of Failure
CONUSE	Concept of Use	SR	System Requirement
DCC	Despatch Crew Commander	SRD	System Requirement Document
Def Stan	Defence Standard	SRO	Senior Responsible Owner
DLoD	Defence Lines of Development	STANAG	Standard NATO Agreement
DO	Design Organisation	STE	Support and Test Equipment
DOB	Deployed Operating Base	T&E	Test and Evaluation
DSAT	Defence Systems Approach to Training	TAD	Target Audience Description
DST	Design Safety Target	URD	User Requirement Document
DSPCR	Defence and Security Public Contracts Regulations	VfM	Value for Money
DZ	Drop Zone	VMC	Visual Meteorological Conditions
ECRtL	Equipment Contribution to Risk to Life	W&B	Weight and Balance
FE	Force Element	WBM	Weight and Balance Manual
FLC	Front Line Command	WSOP(CM)	Weapon System Operator (Crewman) (RAF Loadmaster equivalent)
FOC	Full Operating Capability		
GRS	Guidance Restraint System		
HF	Human Factors		
HFI	Human Factors Integration		
IAW	In Accordance With		
ICD	Interface Control Document		
IP	Impact Point		
IOC	Initial Operating Capability		
JADTEU	Joint Air Delivery Evaluation and Test Unit		
JSP	Joint Service Publication		
KSR	Key System Requirements		
LBAD	Large Boat Aerial Delivery		

Glossary of Terms.

Term	Definition
Activation	The means by which the A/C or Crew initiate the extracted load deployment sequence
Airdroppable System	A fully assembled and configured platform and ancillaries to meet a certified capability for despatch from an A/C IAW AERC and RTS clearances.
Airdropped	The effect of a certified system despatched from an A/C to a specified DZ.
Check	Compare the item with the specified standard. If the item does not meet the specified standard the supervisor is to be informed. No remedial action is to be taken unless directed.
Configured	The act of preparing the platform to receive a specific payload
Construct	The act of building the platform component parts to be ready to accept a payload.
Deployed	The effect of the System being initiated and developing through the sequence of events delivering the payload to the DZ.
Deployment	The act of the system conducting the prescribed sequence of events from initiation through to DZ arrival.
Depth Storage	Stored at MoD Bicester within normal supply stock conditions
De-rigging (and Rigging)	The act of removing (adding) specific system components
Descent	The phase of an airdrop sequence whereby the ‘system’ travels downward outside of the A/C.
Dismantle	The procedural deconstruction of a derigged platform
DOB Storage	Stored at a DOB rigged/unrigged, may be outside required climatically controlled environments
Extraction	The act of the System being extracted from the aircraft before translating to a descent profile
First Movement	Moment immediately after release of all restraints of the Platform inside the A/C cargo hold before an Airdrop
Fully rigged system	System installed in A/C with all extraction components fitted and ready for subsequent deployment activation.
Installed	The act of physically loading the platform into the A/C and preparation of equipment in readiness for deployment
Loaded	The act of equipment carried onto the A/C and secured for a logistical transportation purpose.
MOB Storage	Stored within the 47AD footprint at BZN ready to be ‘assembled’ and prepared for rigging processes
Moveable	Movement of the LBAD platform clear of the immediate DZ area for safety reasons.
Payload	The deliverable maritime craft(s) which can be secured onto the LBAD Platform.
Platform	The physical structure to accommodate payload, restraint and secures into the A/C CHS.
Recoverable	Recovery of system and all components (not necessarily including payload) from the DZ to return to specified operating base
Rigged	The act of attaching all additional components that makes the LBAD Platform and Payload into an extracted load.
Serviceable	Determined condition of platform or equipment before use against a specific set of criteria
System	All components of the LBAD system required to enable a specific payload to be rigged, installed, despatched and deployed onto a water DZ.
Transport	The logistical or tactical carriage of the system and /or components and equipment, in a rigged or unrigged condition by the specified means.