

## Annexure B – Evaluation Criteria

STAGE 2: TECHNICAL FUNCTIONALITY					
Item	Specification	Requirement	Weights	Minimum Score	Maximum Score
1	Bidder's Experience	The bidder must provide a minimum of two references letters (company, name and surname of contact person, physical address, email and telephone) confirming experience.  a) Less than two (2) references/projects = 0 b) Two (2) references with < = 4 months experience = 5 c) Two (2) or more references with > 4 months experience = 10	30%	5	10
		The successful bidder will also need to demonstrate through proven experience in the built environment (Real time reconnaissance, surveillance, civil inspections, etc.); Operating an RPAS within a restricted airspace; Night operations and/ or EVLOS operations.  a) < 1 years' experience (0 Points) b) 1 - 2 years' experience (5 Points) c) > 2 years' experience (10 Points)		5	10
		The bidder shall have at least two experienced Remote pilots with a valid Remote Pilot License (RPL) issued by SACAA for the registered drone. Flight hours logbook shall be submitted.  a) < 50 flight hours = 0 b) 50 - 100 flight hours = 5 c) > 100 flight hours = 10		5	10
2	Project Management	Project Management Certification and years of experience in Project Management. The bidder shall state any methodology followed and type of certification.  a) < 1 years' experience (0 Points) b) 1 - 2 years' experience (3 Points) c) > 2 years' experience (5 Points)	10%	3	5
3	Quality Management	Provide a detailed quality management plan which specifies/stipulates  (1) The quality management process to ensure controls around data integrity of the system and repeatability of data collection mechanism, and  (2) Process for Installation and deployment of the system, i.e. deployment checklist or procedures.  a) If the bidder provides only number two (2) = 0 points	10%	3	5

		<div>b) If the bidder provides only number one (1) = 3 point.</div> <div>c) If the bidder provides both (1) and (2) = 5 points.</div>			
4	Technical Requirements	<b>RPAS System Capability including Ground Control Station</b> <div>a) Not covering minimum/mandatory requirements = 0</div> <div>b) Covering minimum/mandatory requirements = 5 points</div> <div>c) Covering all requirement = 10 points</div>	50%	5	10
		<b>RPAS Flight Capability and Control SW</b> <div>a) Not covering minimum/mandatory requirements = 0</div> <div>b) Covering minimum/mandatory requirements = 5 points</div> <div>c) Covering all requirement = 10 points</div>		5	10
		<b>RPAS Physical Characteristics</b> <div>a) Not covering minimum/mandatory requirements = 0</div> <div>b) Covering minimum/mandatory requirements = 2 points</div> <div>c) Covering all requirement = 5 points</div>		2	5
		<b>RPAS Operational Characteristics</b> <div>a) Not covering minimum/mandatory requirements = 0</div> <div>b) Covering minimum/mandatory requirements = 5 points</div> <div>c) Covering all requirement = 10 points</div>		5	10
		<b>RPAS Payload Sensor Capability</b> <div>a) Not covering minimum/mandatory requirements = 0</div> <div>b) Covering minimum/mandatory requirements = 5 points</div> <div>c) Covering all requirement = 10 points</div>		5	10
		<b>RPAS C2 and Data Link</b> <div>a) Not covering minimum/mandatory requirements = 0</div> <div>b) Covering minimum/mandatory requirements = 2 points</div> <div>c) Covering all requirement = 5 points</div>		2	5
		<b>Aerodrome Civil and Electrical Inspections, Data processing and analysis</b> <div>a) Not covering minimum/mandatory requirements = 0</div> <div>b) Covering minimum/mandatory requirements = 5 points</div> <div>c) Covering all requirement = 10 points</div>		5	10
		<b>Totals</b>			<b>100%</b>

**The overall qualifying score is 50% or more to be considered for the next phases/stages in the tender evaluation process.**

## Functional Requirements Checklist

BR	RPAS TECHNICAL SPECIFICATION	Comply Yes / No	Demo
	BR2.3.1. At least one RPA.		
	BR2.3.2. A Ground Control System (GCS) with an aviation approved antenna.		
	BR2.3.3. Compact remote video terminal (RVT).		
	BR2.3.4. Suitable launch and recovery system.		
	BR2.3.5. Outdoor Sun light readable video displays.		
	BR2.3.6. Complete set of payloads with each aerial vehicle. The payload should provide both day and night capabilities to the RPAS.		
	BR2.3.7. Adequate spares along with the necessary storage and carriage paraphernalia.		
	BR2.3.8. Rugged, Compact and lightweight packaging to enable Safe and Hassle-free transportation of within aerodrome airfield.		
	BR2.3.9. The RPA shall be powered by a battery-operated system (propulsion).		D
<b>BR2.4</b> <b>RPAS Flight</b> <b>Control</b> <b>Capability</b>	BR2.4.1. The RPA should be able to operate successfully despite intermittent presence of in-band signals from other RF systems.		D
	BR2.4.2. The RPAS should have a "Return-to-home" functionality. In case of emergency, or break in communication, the RPAS should automatically change to the "Return-to-home" route until the communication is re-established. It is recommended that multiple home locations be defined, and the RPA shall be directed to the nearby "Home" location. If possible, during return "Home" activation, the RPA shall not cross another runway and should also avoid taxiway.		D
	BR2.4.3. The RPAS should have the facility to launch on a pre-programmed flight.		D
	BR2.4.4. The RPAS should have a dynamic programming in flight functionality to provide flexibility for multi-mission planning.		D
	BR2.4.5. The RPAS should be able to store a minimum of 100 flight routes and each route may have minimum of 75 waypoints.		D
	BR2.4.6. The RPAS should have a "Manual Override" functionality or should be reconfigurable to permit overrides of a pre-programmed flight at any time during the mission.		D

	<b>BR2.4.7.</b> All data must be geo-stamped with accurate GPS data (RTK GPS recommended).		<b>D</b>
	<b>BR2.4.8.</b> In case of loss, the RPAS should give a radio beacon, which would assist in its recovery.		<b>D</b>
<b>BR2.5</b> <b>Ground Control Station (GCS)</b>	<b>BR2.5.1</b> Have advance mission planning software features (flight planning).		<b>D</b>
	<b>BR2.5.2</b> Provide secure communications for RPA control and tracking, sensor operation and navigation.		<b>D</b>
	<b>BR2.5.3</b> Facilitate recording and replay of sensor data.		<b>D</b>
	<b>BR2.5.4</b> Have suitable ports for taking data out on a network in the form of video freeze frames/video clipping.		<b>D</b>
	<b>BR2.5.5</b> Have a sun readable screen for live viewing.		<b>D</b>
	<b>BR2.5.6</b> Have a manual control mode/control box to cater for autopilot failure.		<b>D</b>
	<b>BR2.5.7</b> Power supply system should cater for at least five hours of continuous operation with adequate back up.		
	<b>BR2.5.8</b> Manual control functionality for operating various flight control modes and payloads.		<b>D</b>
	<b>BR2.5.9</b> Digital Mass storage for recording live imagery along with metadata / telemetry and still image data received from the sensors and mission flight data for post flight analysis capability. Capability should be minimum 12 hours of recording data of multiple missions in suitable format to be agreed with ACSA.		
	<b>BR2.5.10</b> Compact RVT or wrist mountable video gadget should have ability to overlap the ground video with geo-spatial data available.		<b>D</b>
<b>BR2.6</b> <b>Physical Characteristics:</b>	<b>BR2.6.1.</b> The RPA should be capable of rapid deployment with a detachment not exceeding three persons.		
	<b>BR2.6.2.</b> The RPA should have a day and night operations capability.		
	<b>BR2.6.3.</b> The entire RPAS (RPA + Day and Night Payloads + GCS + RVT + transportation box + Launcher mechanism, if required) shall be easily transportable within an aerodrome airfield.		
	<b>BR2.6.4.</b> The RPA plus any combination of day and night Payloads shall be a maximum of 20 kg.		

<b>BR2.7</b> <b>Operational Characteristics including payload</b>	<b>BR2.7.1.</b> The RPA should have a minimum endurance of 30 minutes with the required payload, i.e. with day /night operational capability (at least mode one at a time) and thermal sensor capability.		<b>D</b>
	<b>BR2.7.2.</b> Minimum of 2.5 km for mission range from point of launch. Note that certain airports have runways with range up to 5 km.		<b>D</b>
	<b>BR2.7.3.</b> The RPAS shall be able to undertake Take-off, flight and landing in winds of up to 5m/s.		<b>D</b>
	<b>BR2.7.4.</b> The RPAS shall be able to provide stable images in winds of up to 5m/s. The condition means that the data captured is still credible and useful for data analytics.		<b>D</b>
	<b>BR2.7.5.</b> The RPAS should have a hover, or locational loiter, functionality.		<b>D</b>
	<b>BR2.7.6.</b> Operational altitude shall be up to 400 feet AGL (above ground level). The bidder shall have mechanism to limit altitude as per regulation and approved operations.		
	<b>BR2.7.7.</b> Both the operating temperature and the storage temperature shall be from minus 5 degree to 55 degrees Celsius.		
	<b>BR2.7.8.</b> The operational procedure shall cover emergency procedures within an aerodrome which may also be initiated by air traffic controller.		
	<b>BR2.7.9.</b> The RPAS should have its maintenance procedure, schedule and records for executed maintenance as prescribed and in line with regulations.		
	<b>BR2.7.10</b> The bidder shall recommend training requirements for ACSA resources that will participate in the trial.		
	<b>BR2.7.11</b> The bidder shall submit a proposed induction plan for ACSA resources that will participate in the Trial.		
<b>BR2.7</b> <b>Payload Sensors</b>	<b>BR2.7.12.</b> The system must be able to identify features of interest such FODs, cracks, spalling, delamination, water, airfield markings, airfield lights, surface types, vehicles, personnel, etc).		<b>D</b>
	<b>BR2.7.13.</b> The sensor packages must provide high-quality Imagery resolution to permit target of interest detection, classification, mapping, recognition, identification and accurate location of fixed targets of interest and movement of personnel and vehicles.		<b>D</b>

<b>BR2.7</b>  <b>RPAS C2 and</b>  <b>Data Link</b>	<b>BR2.7.14.</b> The RPAS should have a suitable data uplink and telemetry and video down link with the GCS with a range of Minimum 7 km LOS (maximum runway in ACSA airports is 5 km). The data link (Uplink and downlink) should be secure with AES Encryption 128 bit or better and should enable automatic tracking of RPAS in flight to minimize loss of communication link.		<b>D</b>
	<b>BR2.7.15.</b> The RPAS should be capable of providing real-time high-quality video with full flight telemetry.		<b>D</b>
	<b>BR2.7.16.</b> The RPAS should be equipped with an Automatic Identification System (AIS) to ensure visibility and traceability by air traffic control.		<b>D</b>
	<b>BR2.7.17.</b> The RPAS should be equipped with an infrared strobe for night operations and a beacon for recovery, i.e. other system may be suggested to assist in the recovery of lost RPAS.		<b>D</b>
<b>BR2.8</b>  <b>RPAS</b>  <b>Inspection Data</b>  <b>Integrity and</b>  <b>Analytics</b>	<b>BR2.8.1.</b> The RPAS should be able to survey and inspect pavement, taxiway and apron surfaces, i.e. to pick up FODs of at least 10mm, measure grass exceeding 10 cm above surface level, detect oil / grease spillages, etc.		
	<b>BR2.8.2.</b> The RPAS should be able to pick up typical signs of deterioration and damage on both concrete and asphalt pavement surfaces.		
	<b>BR2.8.3.</b> The RPAS should also be able to simulate approach angles of aircrafts, to measure or see the visibility of the runway markings, runway lights (i.e. PAPI and Approach lights), signage and runway navigational aids under different weather conditions.		
	<b>BR2.8.4.</b> The RPAS should be able to survey the gradient and slopes of the runway, (both longitudinally and transverse slopes), to confirm the drainage characteristics of the runway. This should be able to be compared with the requirements of Annex 14, and to confirm whether they runway is compliant.		
	<b>BR2.8.5.</b> The RPAS should be able to do technical structural integrity assessment of the underlying pavement layers. This is to determine / calculate the remaining pavement life on the pavement. This includes the depth of the various underlying layers, presence of water, and anything else present under the surface.		
	<b>BR2.8.6.</b> The RPAS should be able to inspect the Aeronautical ground lighting (AGL) fittings and signage for damage or malfunction. Reference should be made to the requirements of the Annex 14.		



	<b>BR2.8.7.</b> The data shall be packaged after Image processing, i.e. based on the mission requirements, how data was captured and on the post-processing (AI) requirements.		<u>D</u>
	<b>BR2.8.8.</b> For multiple sensor solution, there analysis shall include data fusion and present a holistic view of the captured scene. Furthermore, the system should be capable of tracking targets of interest over time, i.e. pavement cracks.		<u>D</u>
	<b>BR2.8.9.</b> The analysis shall provide insight towards Pavement Condition Index (PCI); visibility effectiveness of signage, marking and lighting; identification and severity of defects; and information/recommendations towards preventive or corrective maintenance.		
	<b>BR2.8.10.</b> The processing output shall be overlayed on George Airport's GIS information.		