

Appendix A: Functional Requirement (Part of the Scope of Work)

System Sub-Component	Requirement
Cabin baggage Screening Equipment (3D X-ray machine)	• The machine shall ensure automatic threat detection of explosives, flammable explosive, narcotics alert and prohibited items. • The machine shall be able to store, export and import images. • The machine shall ensure advanced detection algorithms which includes automatic target recognition – which enable faster and more accurate decision-making and reduce operational overheads. • The machine shall have an automated object recognition software which allows for automated detection of an ever-expanding list of prohibited items (latest threats) improving security outcomes and efficiency. • The machine shall be installed with security features and controls to ensure that customer data and assets are well protected from cyber-attacks. • The machine shall have the capability of producing screener performance detection (TIP) report. • The machine shall have a TIP library to be expandable to include new threat images. • The machine shall produce quality images to allow Screener to have a better and accurate judgement on bag contents. • The machine shall reduce human errors, enhance efficiency and increase detection accuracy. • The machine shall have a high detection rate combined with extremely low false alarm rates. • The supplier shall provide a manufacturer's machine specific standard test piece (STP) per machine. • The machine shall have the ability to screen bags with electronics inside including laptops and with liquids inside the bags. • The machine shall have the ability to produce 360 rotatable 3D images. • The machine shall be ECAC or TSA approved. • Radiation safety certificate by South African Health Products Regulatory Authority (SAHPRA)

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System Sub-Component	Requirement
Goods and Supplies Xray machine (2D X-ray Machine)	• The machine shall be capable of accommodating bigger and out of gauge consignments. • The machine shall be capable of detecting opaque and dense objects. • The machine shall ensure automatic threat detection of explosives, flammable explosive, narcotics alert and prohibited items. • The machine shall have advanced detection algorithms and AI applications – including automatic target recognition – which enable faster and more accurate decision-making and reduce operational overheads. • The machine shall be able to store, export and import images. • The machine shall have the capability of producing screener performance detection (TIP) report. • The machine shall produce quality images to allow Screener to have a better and accurate judgement on bag contents. • The machine shall reduce human errors and enhance efficiency and increase detection accuracy. • The machine shall have a high detection rate combined with extremely low false alarm rates. • The machine shall be capable of adapting to future threats. • The machine shall have an automated object recognition software which allows for automated detection of an ever-expanding list of prohibited items, improving security outcomes and efficiency. • The machine shall be installed with security features and controls to ensure that customer data and assets are well protected from cyber-attacks. • The machine shall reduce the amount of time and resources by collapsing decision making levels 1 and 2 into a single and seamless decision-making process. • The machine shall be capable of explosive detection, explosive trace detection, and improvised explosives detection. • The supplier shall provide a manufacturer's machine specific standard test piece (STP) per machine. • Radiation safety certificate by South African Health Products Regulatory Authority (SAHPRA)
Full body scanner	Detection Capabilities: • The scanner shall have the capability to detect anomalies from head to toe.

System Sub-Component	Requirement
	• The scanner shall have automatic threat detection of explosives and plastic explosives and prohibited items. • The scanner shall have advanced detection algorithms and AI applications – including automatic target recognition – which enable faster and more accurate decision-making and reduce operational overheads. • The scanner shall have a very high detection speed {up to 15m/s}. Build-in operational and technical functional. • The scanner shall have an automated object recognition software which allows for automated detection of an ever-expanding list of prohibited items, improving security outcomes and efficiency. Privacy Control: • The scanner shall be installed with security features and controls to ensure that customer data and assets are well protected from cyber-attacks. • The scanner shall be capable of adapting to future threats. • The scanner shall be able to display the position of a weapon on a person. Increase the rate of persons passing whilst effectively detecting weapons and metals. Speed & Efficiency: • The scanner shall provide a single location or multiple locations of weapons in transit. Ability to provide high speed of detection. • The scanner shall have a very high discrimination and transit flow rate, indicate machine through put. • The scanner shall have a quick reset time, programmable in milli seconds. • The supplier shall provide a manufacturer's machine specific standard test piece (STP) per machine. Compliance: • The scanner shall be ECAC or TSA approved. • Radiation safety certificate by South African Health Products Regulatory Authority (SAHPRA)
Automated Lanes	• The automated lanes system shall fit into current checkpoints size and layout limitation. • The automated lanes system shall have a modular design allowing system to be adapted to available space.

System Sub-Component	Requirement
	• The automated lanes system shall be integrated with the automatic tray handling system. • The automated lanes system shall be able to deliver a steady flow of trays. • The automated lanes system shall deliver the subsequent benefits of increased throughput and an improved passenger experience. • The automated lanes system shall remove current capacity bottlenecks and keeping the process moving, by addresses the key issues of passenger divestment. ○ tray loading and return. ○ re- routing suspicious items. ○ and 'reclaim 'space at the end of the checkpoint. • The automated lanes system shall offer the flexibility to develop a variety of configurations to meet different requirements and expand to handle increasing passenger traffic. • The automated lanes system shall be future proof with the capability to incorporate new inspection systems and functions. • The automated lanes systems shall be able to seamlessly be integrated into the other checkpoint components. • The automated lanes system shall be capable of throughput capacity during normal operation increase by at least 15% compared to conventional checkpoints. • The automated lanes system shall have greater operational efficiency. • Open interfaces for technologies as ○ Remote screening ○ Automatic and random diversion
Arch Way Metal Detector	• The AMD shall have the capability of reliable and consistent detection of ferrous and non-ferrous metal. • Location, orientation and speed of metal passing through should not influence the detection capability. • The electromagnetic field inside the AMD shall meet minimum standards. • The AMD shall have the capability to differentiate between different metals and alloys. (iron based and non-iron-based) • The AMD shall have both audible and visual alarm indication, and the alarm duration should be adjustable. • The AMD shall be able to indicate the location of the metal detected. • The AMD shall be able to detect at multiple zones.

System Sub-Component	Requirement
	• The AMD shall be able to adjust to selectable settings. • The AMD shall have continuous self-checking of key parameters and will alarm when a malfunction is detected. • The system shall include features to minimize electromagnetic interference from external sources, such as nearby electronic equipment. • The AMD shall be capable of accumulating statistical data such as time of operation, passenger counts and alarm counts. • The AMD shall be designed for ease of maintenance. • The AMD should have a battery backup with automatic intervention in the event of power blackout and battery operation signalling. • Instructions for installation, operation, maintenance, trouble- shooting, list of essential spare parts and equipment guarantees and warranties should be provided by the manufacturer. • The AMD must be fitted with a randomizer. • The supplier shall provide a manufacturer's machine specific standard test piece (STP) per machine. • The AMD must be ECAC or TSA approved. • Radiation safety certificate by South African Health Products Regulatory Authority (SAHPRA)
Remote Screening room	Location • Facility located in secure, access-controlled area • Total facility size depending on available space for Primary and Secondary rooms. • Physically separated from passenger screening checkpoints • Adequate space for: ○ Screening workstations ○ Supervisor stations ○ Server/IT room • Acoustic insulation provided • Controlled lighting (low glare, dimmable) • Staff welfare areas nearby (restrooms, break room) IT & Network

System Sub-Component	Requirement
	• High-bandwidth network (low latency) • Redundant network links (failover) • Secure data transmission (encryption) • Firewall + intrusion detection systems • Image storage and server capacity adequate • Compliance with DICOS or equivalent imaging standards Screening Technology Integration • Integrated with X-ray / CT scanners • Supports 2D and 3D image analysis • Automated Threat Detection (ATD) compatible • Multiplexing (multi-lane image distribution) enabled Workstations requirements • High-resolution monitors installed • Adjustable brightness/contrast controls • User-friendly screening software interface • Communication tools (voice/data link to CSP) • Ergonomic desks and chairs • Operator consoles • Input devices (keyboard, mouse, specialized controllers) Operations • First-in, first out (FIFO) image processing system. This means that the first bag scanned is the first image reviewed. • Dynamic image allocation capability • Supervisor monitoring station • Quality assurance processes in place • Staff rotation and fatigue management policy

System Sub-Component	Requirement
	Communication with CSP staff • Real-time communication with CSP staff • Integrated intercom / radio / VoIP system Business Continuity • UPS backup power • Generator backup • Redundant servers/storage • Disaster recovery plan • Local fallback screening capability Environment • HVAC system (temperature & humidity controlled) • Low noise levels • Glare-free lighting design Space Standards (proposed) Dimensions per workstation. Desk spacing. Ceiling: acoustic panels. Flooring: anti-static.