

Section II: Schedule of Requirements

e-Sourcing reference:ITB/2023/46755

Supply, Delivery, and Installation of Medical delivery Drone system for Ministry of Health, Maldives

1.0 Summary of Requirements:

UNOPS requirements comprised of the following Lots:

Lot No	Description of the Item	Number of Units
01	Medical delivery drones	02

1. Background

The Ministry of Health is working towards the establishment of medical delivery drone system in the Maldives to facilitate delivery of urgent medical supplies such as urgent drugs, blood bags for transfusion, urgent blood samples for laboratory analysis and urgent medical equipment to remote islands from a central location.

Therefore, MoH is looking for an expert supplier who would develop an effective medical delivery drone system in the Maldives.

2. Scope of work (Service Flow)

Medical delivery drone system between islands is required with appropriate equipment in the base station and each of the delivery locations in order to receive urgent medical supplies by the health facilities located in each of the delivery locations.

Nos of delivery location will be increased depending on the success of the operations in the initial locations.

Lot 1 : Medical delivery drone system

No	Technical Specification
1	A. DRONE TYPE AND QUANTITY 1. Vertical take-off and landing (VTOL) - Electronic 2. Supplier should deliver 2 drones
2	B. FLIGHT MODES 1. Automatic mission 2. Return-to-home 3. Manual go-to function 4. Emergency procedures
3	C. WEIGHT (MAXIMUM) 1. 20Kg with batteries (without payload)
4	D. PAYLOAD (MINIMUM) 1. 2.5 kg (payload weight) 2. Medical Payload boxes must be provided with the drones
5	E. BATTERIES 1. Lithium batteries 2. Vendor should provide extra two batteries for each drone.

6	<p>F. SENSORS</p> <ol style="list-style-type: none"> 1. Magnetometers 2. Inertial Measurement Units (IMU) 3. 2 x Dual-antenna Global Navigation Satellite System (GNSS) 4. Airspeed sensor 5. Lidar Altimeter 6. Front and down-facing camera 7. Automatic Dependent Surveillance-Broadcast (ADS-B) in/out 8. Flight Alarm (FLARM)
7	<p>G. CONNECTIVITY</p> <ol style="list-style-type: none"> 1. Cellular telemetry (3G/ 4G) 2. Radio telemetry (Mesh Network) 3. Drone should be capable to integrate Sattelite (Iridium) telemetry system if needed.
8	<p>H. FLIGHT SPEED (FIXED-WING MODE)</p> <ol style="list-style-type: none"> 1. Cruise speed must be higher than or equal to 15 m/s
9	<p>I. CLIMB SPEED (MULTICOPTER MODE)</p> <ol style="list-style-type: none"> 1. Minimum 3 m/s climb rate 2. Minimum 2 m/s descent rate
10	<p>J. WIND RESISTANCE HANDLING</p> <ol style="list-style-type: none"> 1. Minimum 12 m/s (Multicopter mode) 2. Minimum 15 m/s (With Wings)

11	K. WEATHER AND ENVIRONMENT 1. Suitable for operation in coastal and offshore environment 2. Tropical climate
12	L. ALTITUDE (FIXED-WING MODE) 1. 3000 m AMSL or higher
13	M. FLIGHT TIME 1. Minimum 45 min (with 2kg payload)
14	N. FLIGHT RANGE (WITH 2 KG PAYLOAD) 1. Minimum 35 km (Direct two-way flight)
15	O. GROUND CONTROL STATION 1. Dedicated control station hardware
	P. CONTROL SYSTEM 1. Autonomous 2. Controller and autonomous autopilot 3. Drone must have a logistics software for easy management, route programming and notifications. Software should be provided for a minimum of 12 months. 4. When in autonomous mode, flight real-time visibility must be available through dashboard. 5. Vendor must provide a technical analysis and detailed overview of the drone communication system (program and other security features). 6. Drone should be able to integrate Unmanned Aircraft System Traffic Management (UTM)
	Q. FAILSAFE 1. Independent and dissimilar failsafe mechanism 2. Vendor must ensure drone override protection 3. Vendor shall provide other security and safety features of the drone

R. OPERATION, SUPPORT SERVICES, TRAINING AND WARRANTY

1. Vendor should have experience of flying drone Beyond Visual Line of Sight (BVLOS) approved by European Union Aviation Safety Agency (EASA) by using Specific Operations Risk Assessment (SORA) methodology.
2. The vendor should have a local agent in the Maldives or consent to be given to have a local agent within 2 weeks from the date of contract award / details of the local agent.
3. Local vendor support should be available.
4. A minimum of 3 pilots will have to be trained for handling and operation of the drone as well as maintenance.
5. A minimum of 1-year vendor service warranty must be provided.
6. Vendor must install base stations on ground.
7. Ground handling of drones must be relatively easy and be able to be carried out with minimal training. Training for ground handling to be provided by the vendor.
8. Vendor must get necessary approvals to fly the drone before the start of the operation. (Ministry of Health will facilitate the drone operation approval process. Authority approval required in Maldives is: Maldives Civil Aviation Authority).
9. The drone will be operated in three locations (between three islands).
10. Vendor should quote separately for the drone operation in the Maldives for a period of 12 months. The quote rate should be given for the operation of drones between two locations (two islands) and can be extended based on need and requirement (Cost to be provided separately). The Ministry of Health may sign an agreement with the vendor to operate drones in the designated locations based on need and the availability of finance.
11. Vendor should provide the following spare parts with each drone (2propellers, 2Wings, 2Tails and 2Pitotubes).

Lot - 01

UNOPS Requirements	
Delivery time	Bidder shall deliver the Lot 01 within 8 Weeks after signature of contract.
Delivery place and Incoterms rules	<p>Delivery place and Incoterms rules as per DAP Incoterms 2010 including unloading at site. The quoted DAP price must include all the costs associated for a satisfactory installation, commissioning and training of the units under this tender.</p> <p>Customs clearance will remain the responsibility of the supplier. Ministry of Health is tax exempted and the required tax exemption documents will be provided by them.</p> <p>Drone base station locations:</p> <p>Nominated three locations (islands) by the Ministry of Health, Maldives.</p>
Consignee details	Ministry of Health, Maldives Roashanee Building Sosun Magu, Male, Maldives