# *ANNEX II + III:* TECHNICAL SPECIFICATIONS + TECHNICAL OFFER

**Contract title:** **Equipment pack for stakeholders capacity building and environmental studies**

**Publication reference:** RORS00127/MYNATURE/5

**Columns 1-2 should be completed by the contracting authority**

**Columns 3-4 should be completed by the tenderer**

**Column 5 is reserved for the evaluation committee**

Annex III - the contractor's technical offer

The tenderers are requested to complete the template on the next pages:

* Column 2 is completed by the contracting authority shows the required specifications (not to be modified by the tenderer),
* Column 3 is to be filled in by the tenderer and must detail what is offered (for example the words ‘compliant’ or ‘yes’ are not sufficient)
* Column 4 allows the tenderer to make comments on its proposed supply and to make eventual references to the documentation

The eventual documentation supplied should clearly indicate (highlight, mark) the models offered and the options included, if any, so that the evaluators can see the exact configuration. Offers that do not permit to identify precisely the models and the specifications may be rejected by the evaluation committee.

The offer must be clear enough to allow the evaluators to make an easy comparison between the requested specifications and the offeredspecifications.

**General Requirements**

* All requirements stated and outlined in this document must be regarded as mandatory and the minimum acceptable criteria.
* All requirements outlined in this document shall be understood to include the phrase "or equivalent".
* The tenderer is required to provide the specifications of the offered items in the Technical Offer, including details such as the manufacturer, product type, model, and country of origin.

| **1.**  **Item number** | **2.**  **Specifications required** | **3.**  **Specifications offered** | **4.**  **Notes, remarks,  ref to documentation** | **5.**  **Evaluation committee’s notes** |
| --- | --- | --- | --- | --- |
| **1** | **High-Precision Industrial Drone System with RTK Navigation, Long-Range Video Transmission, and Multi-Payload Support with 2 Years protection plan**  Technical Requirements:   * Max Takeoff Weigh at least: 9kg * Hovering Accuracy (moderate/no wind) – Vertical: ±0.1 m (vision) / ±0.5 m (with GNSS) / ±0.1 m (with RTK) – or better * Hovering Accuracy – Horizontal: ±0.3 m (vision) / ±1.5 m (GNSS) / ±0.1 m (RTK) – or better * RTK Positioning Accuracy:1 cm + 1 ppm (horizontal) / 1.5 cm + 1 ppm (vertical) – or better * Max Ascent Speed: 6 m/s – or better * Max Vertical Descent Speed: 5 m/s – or better * Max Tilted Descent Speed: 7 m/s – or better * Max Horizontal Speed: 23 m/s – or better * Max Flight Altitude: 7,000 m – or better * Max Wind Speed Resistance: 12 m/s – or better * Max Flight Time: at least 55 minutes (measured with no payloads, windless environment) * Single Gimbal Damper’s Payload: at least 900 g * Supported Gimbals: DJI & Other-Party Payloads * Supported Gimbal Configurations: Single downward; single upward; dual downward; downward+upward; dual downward+upward * Ingress Protection Rating at least: IP55 * Global Navigation Satellite System (GNSS): GPS, GLONASS, BeiDou, Galileo * Operating Temperature at least within the range: –20 °C to 50 °C * Remote Controller: included   + Screen: minimum 7-inch LCD touchscreen; Resolution at least 1920×1200; Max brightness or better 1200 nit   + GNSS: GPS + Galileo + BeiDou   + Built-in Battery   + External Battery   + Operating Time: Built-in battery: approx. 3 hrs; Built-in + external battery: approx. 6 hrs   + Operating Temperature: –20 °C to 50 °C   + Protocols: Wi-Fi 6, Bluetooth 5.1 * Video Transmission   + The drone shall utilize a digital transmission system capable of providing up to three simultaneous 1080p HD video channels   + Max Transmission Distance (unobstructed, free of interference): 20 km (FCC); 8 km (CE/SRRC/MIC) – at least   + Max Transmission Distance (with interference): Low interference & obstructed by buildings: ~0–0.5 km; Obstructed by trees: ~0.5–3 km; Strong interference & unobstructed: ~1.5–3 km; Medium interference & unobstructed: ~3–9 km; Low interference & unobstructed: ~9–20 km (measured at ~120 m altitude) * Vision System   + Obstacle sensing range – Forward/Backward/Left/Right: 0.7–40 m   + Obstacle sensing range – Upward/Downward: 0.6–30 m   + FOV – Forward/Backward/Downward: 65° (horizontal) / 50° (vertical)   + FOV – Left/Right/Upward: 75° (horizontal) / 60° (vertical)   + Operating environment: Surfaces with discernible patterns and adequate lighting (lux >15) * Infrared Sensing System   + Obstacle sensing range: 0.1–8 m   + FOV: 30° (±15°)   + Operating environment: Broad, diffuse or reflective surfaces with reflectivity above 10%. * LED Auxiliary Light   + Effective illumination distance at least 5 m * FPV Camera   + Resolution: 1080p   + FOV: 142°   + Frame rate: 30 fps   + low-light / night-vision operation * The aircraft shall use dual hot-swappable intelligent batteries, each at of least 5,800 mAh and > 250 Wh, operable from –20 °C to +50 °C, and rated for at least 400 charge cycles. |  |  |  |
| **2** | **High-Accuracy GNSS Base Station for RTK Drone Positioning and Data Synchronization compatible with item 1**  Technical Requirements:   * Full compatibility with drone at item 1 * GNSS Frequency   + GPS: L1C/A, L2C, L5   + BDS: B1I, B2I, B3I, B1C, B2a, B2b   + GALILEO: E1, E5a, E5b, E6   + GLONASS: L1, L2   + QZSS: L1C/A, L2C, L5   + L-Band * Base Station Accuracy: * Single Point Accuracy (Uncalibrated):   + Horizontal: 1.5 m (RMS)   + Vertical: 3.0 m (RMS) * Satellite-Based Differential Accuracy:   + Convergence Time: 20 mins   + Horizontal: 30 cm (RMS)   + Vertical: 40 cm (RMS) * Network RTK Calibration:   + Horizontal: 1.0 cm (RMS) + 1 ppm   + Vertical: 3.0 cm (RMS) + 1 ppm * Rover Station Mode * RTK Accuracy (Fixed Survey):   + Horizontal: 0.8 cm (RMS) + 1 ppm   + Vertical: 1.5 cm (RMS) + 1 ppm * RTK Accuracy (Tilt Survey):   + Angle Range: 0° to 60°   + Horizontal: 8 mm + 0.7 mm/° tilt (accuracy <2 cm within 30°) * Max Transmission Distance in Base Station Mode, Between RTK station and the aircraft: FCC: 15 km, SRRC: 12 km, CE/JP: 8 km * Max Transmission Distance in Relay Station Mode:   + FCC: Between the aircraft and the relay station: 25 km   + FCC: Between the relay station and the remote controller/Dock: ~1 km   + SRRC: Between the aircraft and the relay station: 12 km   + SRRC: Between the relay station and the remote controller/Dock: ~1 km   + CE: Between the aircraft and the relay station: 10 km   + CE: Between the relay station and the remote controller/ Dock: ~300 m * Max Transmission Distance (obstructed, with interference):   + Low Interference and Obstructed by Buildings: ~ 0-0.5 km   + Low Interference and Obstructed by Trees: ~ 0.5-3 km * Battery Operating Time * Multifunctional Station:   + Relay Station: ~4 hrs   + Base Station：~7 hrs   + Rover Station: ~10 hrs * Operating Temperature (at least within range): -20° to 55° C |  |  |  |
| **3** | **High-Capacity Intelligent Battery for Extended Drone Flight Operations compatible with drone at item 1: 4pcs**  Technical Requirements:   * Capacity: at least 5880 mAh * Type of cells: Li-ion * Energy: at least 260 Wh |  |  |  |
| **4** | **High-Resolution Multispectral Sensor Payload Kit for Aerial Platforms compatible with drone at item 1**  Technical Requirement   * GSD @ 120 m AGL: Multispectral 7.7 cm/pixel per multispectral band; Panchromatic 3.98 cm/pixel for the panchromatic band * GSD @ 60 m AGL: panchromatic pan-sharpened 2.0 cm/pixel * Spectral Bands (10 bands - Center Wavelengths and Bandwidths):   + Ocean Blue: Center 444 nm; Bandwidth 28 nm   + Blue: Center 475 nm; Bandwidth 32 nm   + Green: Center 531 nm; Bandwidth 14 nm   + Green: Center 560 nm; Bandwidth 27 nm   + Red: Center 650 nm; Bandwidth 16 nm   + Red: Center 668 nm; Bandwidth 14 nm   + Red Edge: Center 705 nm; Bandwidth 10 nm   + Red Edge: Center 717 nm; Bandwidth 12 nm   + Red Edge: Center 740 nm; Bandwidth 18 nm   + Near-IR: Center 842 nm; Bandwidth 57 nm * Sensor Resolution: Minimum 1.6 MP per multispectral band (1456×1088 pixels); Minimum 5.1 MP for the panchromatic band (2464×2056 pixels) * Utilizes a CFexpress type storage card * Maximum raw DNG image capture rate of a minimum of 3 captures per second * Sensor features a Global Shutter for all bands * Includes a Downwelling Light Sensor (DLS) and a Calibrated Reflectance Panel (CRP) for radiometric calibration * Supports external GPS/GNSS or position/attitude data input for metadata injection * Interfaces: Ethernet (10/100/1000), Serial (MAVLink compatible), and PWM/GPIO trigger * API interface available for custom software integration * Includes a mounting system/interface and cables compatible with the drone presented at item 1 |  |  |  |
| **5** | **High-Precision LiDAR Payload with Integrated RGB Camera for Aerial Surveying compatible with drone at item 1**  Technical Requirements:   * Weight (less than): 1000 g * Typical power consumption: 28 W; Maximum: 58 W * Ingress protection: IP54 * Operating temperature: -20 °C to +50 °C * LiDAR System   + Detection range: up to 450 m at 50% reflectivity (0 klx)   + Detection range: up to 250 m at 10% reflectivity (100 klx)   + Point cloud rate (single return): up to 240,000 points/s   + Point cloud rate (multi return): up to 1,200,000 points/s   + System accuracy at 150 m altitude: Horizontal ~5 cm; Vertical ~4 cm   + Ranging accuracy (RMS 1σ) at 150 m: 2 cm   + Minimum detection range: 3 m   + Maximum returns: 5   + Scan field of view (FOV):     - Repetitive scanning: Horizontal 70°, Vertical 3°     - Non‐repetitive scanning: Horizontal 70°, Vertical 75°   + Laser divergence: Horizontal 0.2 mrad, Vertical 0.6 mrad   + Laser wavelength: 905 nm   + Laser spot size at 100 m (FWHM): ~4 cm horizontally, ~12 cm vertically * RGB Camera / Mapping Camera   + Sensor type: 4/3″ CMOS, 20 MP effective pixels   + Lens equivalent focal length: 24 mm; Field of view: 84°   + Aperture range: f/2.8–f/11   + Autofocus from 1 m to infinity   + Photo resolution: 5280 × 3956 (4:3)   + Video resolution: up to 4K (3840 × 2160) @ 30fps; Full HD (1920 × 1080) @ 30fps   + Shutter speeds: Mechanical 2 s to 1/2000 s; Electronic 2 s to 1/8000 s   + ISO range (photo & video): 100–6400 at least   + Supported file system: exFAT * Gimbal & Mount compatible with drone at item 1   + 3‐axis stabilized gimbal (tilt, roll, pan)   + Mount interface: detachable   + Tilt range: -143° to +43°   + Pan range: ±105° (mechanically)   + Controllable pan: ±90° * Data Storage & Formats   + MicroSD slot: supports UHS‐I Speed Grade 3 or above; at least 256 GB   + Supported point‐cloud output formats: LAS, PLY, PCD, PNTS, S3MB |  |  |  |
| **6** | **Comprehensive Aerial Mapping and 3D Data Processing Software for Professional Surveying (perpetual licence) capable of processing LIDAR data collected by payload at item 5**  Compatibility & Data Support   * Core Software Requirements: the software solution must be a dedicated 3D modeling and mapping application utilizing photogrammetry as its core technology. * Data Compatibility: must natively and fully process raw data collected by LiDAR sensors (including item at point 5) with integrated high-resolution RGB mapping cameras. * Primary Outputs: must be capable of generating both high-resolution 2D maps (Orthomosaics) and high-precision 3D Models/Point Clouds. * Advanced Reconstruction: must be equipped with next-generation reconstruction technology (e.g., Gaussian Splatting) to produce photorealistic 3D models and distortion-free orthomosaics, particularly improving the representation of fine structures and complex elements like vegetation. * LiDAR Point Cloud, Mandatory: must generate a high-precision True-Color Point Cloud by fusing the LiDAR depth data with the corresponding RGB imagery. * LiDAR Analysis: must allow for the application of Annotations and various Measurements directly on the reconstructed Point Cloud. * Measurement Tools: must provide integrated tools for calculating linear distances, surface areas, and volumes on 2D and 3D outputs. * Multispectral: must be able to process multispectral images to generate key Vegetation Indices (e.g., NDVI and NDRE). * Flight & Mission Planning   + Automated Planning: must include automated flight route generation for Area Mapping, Oblique Photography and Corridor Mapping.   + Detailed Inspection: Supports model-based inspection planning.   + Real-Time Mapping: must offer the capability to generate a Real-Time 2D orthomosaic or a 3D Point Cloud during the flight for immediate on-site data verification. * Accuracy & Processing   + Georeferencing,Must support the use of Ground Control Points (GCPs) for enhanced absolute accuracy.   + Coordinate Systems: must support conversion to and from a large library of major coordinate systems (≥8500 coordinate systems). |  |  |  |
| **7** | **High-Performance Portable Computing System for Intensive Applications**  Technical Requirements:   * Processor (CPU): at least Intel Core Ultra 9, 24 cores. Minimum Boost Frequency 5.4 GHz. * Video Card (GPU): with a minimum of 12 GB dedicated VRAM. * Memory (RAM): Minimum 32 GB DDR5 (5600 MHz or faster) upgradable to at least 96GB. * Storage (SSD): Minimum 1 TB SSD NVMe PCIe Gen 4 or faster. * Display (Diagonal): at least 16 inches (diagonal). * Display (Resolution): at least QHD+ (2560×1600 or similar). * Chassis (Material): Chassis (Lid/Deck) made of aluminum/magnesium alloy or similar metal. * Wireless Connectivity: Wi-Fi 7 or newer. * Network Connectivity: Gigabit Ethernet Port (10/100/1000 Mbps). * Additional Ports: Thunderbolt. * Warranty: Minimum 24 months.. |  |  |  |