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

**Contract title:** **Public procurement of supplies for project REBIOFORESTS**

**Ref. number:** **HR-RS00062 – PP2 – TD02**

**LOT 1 - Drone for a fertilizer application**

**Columns 1-2 should be completed by the Project partner**

**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 Project partner 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.

The requirements set out in the technical specifications represent the minimum technical characteristics which offered goods must satisfy, unless stated otherwise, and tenderers are not allowed to modify technical specification in any way.

For each item for which it is not explicitly stated that it is allowed to offer goods of the equal characteristics, i.e. for each item where it is not stated “or equivalent”, for the purposes of this tender documentation it is assumed that words “or equivalent” are stated, and tenderer is allowed to offer equivalent goods / goods of equivalent characteristics.

**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 are accompanied by 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. All documentation must be provided in English or Serbian, both in hardcopy and electronic formats.

• The selected contractor is required to provide all necessary documentation for the registration of the completed vehicle in accordance with the relevant legal regulations in the Republic of Serbia. This includes the Certificate from the Agency for Traffic Safety confirming the vehicle examination, as well as the technical inspection registration sheet, which is required for further vehicle registration.

| **1.**  **Item Number** | **2.**  **Specifications Required** | **3.**  **Specifications Offered** | **4.**  **Notes, remarks,  ref to documentation** | **5.**  **Evaluation Committee’s decision (Y/N)** |
| --- | --- | --- | --- | --- |
| **1** | **Drone for a fertilizer application**  **Quantity: 1 Unit set**  **(Unmanned treatment system specialised for forestry)** |  |  |  |
|  | **Required contents and characteristics  of the Unit set:**  • Drone system for precise spraying by airflow, with remote controls and standard accessories,  • Drone Spraying system extension with additional 2 nozzles for high flows (to provide total of 4 centrifugal nozzles)  • Standard flight battery set for drone (3 intelligent flight batteries)  • Fast battery charger  • Relay signal transmission system  • RTK base station for precise positioning of drones with tripod and standard accessories  • Full set of spare propellers for drone  • Auxiliary mapping system for mission paths preparation in forestry, nurseryes and orchard and for application map preparation DJI Mavic 3M with Enterprise Battery kit  • Power Generator with cables  • Certified installation of the system and technical support by official manufactures maintenance provider with at least 2 certified maintenance engineers  • Certified training in the automated application of the system for herbal treatment in forestry, nurseries and orchards, by training instructors certified by manufacturers training academy and certified by EASA / ICAO (3+4 days, up to 60 hours at location of training provider, for up to 4 trainees)  **Drone system specs**  • Weight: max 40 kg (excl. flight battery) / max 52 kg (incl. flight battery)  • Max takeoff weight for spraying: 92 kg (at sea level), Max takeoff weight for spreading: 103 kg (at sea level)  • Max Diagonal Wheelbase 2200 mm  • Dimensions: max 2800×3100×850 mm (arms and propellers unfolded), max 1200×750×900 mm (arms and propellers folded)  • Hovering Accuracy (with strong GNSS signal)  RTK enabled: Horizontal: ±10 cm, Vertical: ±10 cm  RTK disabled: Horizontal: ±60 cm, Vertical: ±30 cm (radar module enabled: ±10 cm)  • RTK/GNSS System: Antenna number min 2, Operating Frequency: RTK: GPS L1/L2, GLONASS F1/F2, BeiDou B1I/B2I/B3I, Galileo E1/E5b, QZSS L1/L2, GNSS: GPS L1, GLONASS F1, BeiDou B1I, Galileo E1, QZSS L1  • Max Configurable Flight Radius 2000 m  • Max Wind Resistance min 6 m/s  • Drone Propulsion System Motors: Stator Size min 100×33 mm, KV 48 rpm/V, power Min 4000 W/rotor, Number of motors: Min 8  • Drone Propulsion System Propellers: Material Nylon carbon fiber filament, Diameter max 1400 mm**,**  • Drone Dual Atomizing Spraying System - Spray Tank: Material: Plastic (HDPE), Volume: Min 40 L, Operating Payload: Min 40 kg, Quantity: 1  • Drone Dual Atomizing Spraying System – Sprinklers: Dual Atomizing Rotary Nozzles, droplet size minimum range 50-500 μm, Effective Spray Width in range min 4-11m  • Drone Dual Phased Array Radar System: minimum oneforward phased array radar and one rear phased array radar, cabaple of Terrain Follow, at slope in mapping-free operation: 50°, Min altitude detection range: 1-50 m, Stabilization working range: min 1.5-30 m, Multidirectional Obstacle Avoidance with ostacle sensing range: min 1-50 m, Radar FOV: Forward phased array radar: horizontal 360°, vertical ±45°, upward ±45° (cone), Rear phased array radar: vertical 360°, horizontal ±45°, Working conditions: flying higher than 1.5 m over the obstacle at a horizontal speed no more than 10 m/s and vertical speed no more than 3 m/s., Safety limit distance: Max 2.5 m (distance between the front of propellers and the obstacle after braking)  • Drone Binocular Vision System: Measurement range: min 0.5-29 m, Effective Sensing Speed: ≤10 m/s, FOV - Horizontal: minuimu 90°, Vertical: min 100°  • Drone Remote Controller: Operating Frequency: 2.4000-2.4835 GHz, 5.725-5.850 GHz, Transmission Distance: 7 km (FCC), 4 km (MIC/CE) (unobstructed, free of interference, and at an altitude of 2.5 m), GNSS: GPS+Galileo+BeiDou, Screen: Min 7-inch LCD touchscreen, with a resolution of Min 1920×1200 pixels, and high brightness of Min 1200 cd/m2, Operating Temperature: -20° to 50° C, Internal Battery Runtime: Min 3 hours, External Battery Runtime: Min 2 hours 40 minutes, Charging Time: Max 2 hours for internal battery or internal and external battery  **Intelligent Flight Battery spec**  • Model: DB1560 or equivalent, Weight: max 13 kg,  • Capacity: Min 30000 mAh, Nominal Voltage: Min 52.2 V  **Fast battery charger spec**  • Model: C10000 or equivalent, Weight: max 12 kg,  • Dual power input, Input 1 (Main): 220-240 VAC, 50/60 Hz, 24 A MAX, Input 2 (Auxiliary): 220-240 VAC, 50/60 Hz, 24 A MAX,  • Output: 59.92 VDC MAX, 175 A MAX, 9000 W MAX, Charging Time: fully charges a battery in 9 to 12 minutes (DB1560 Intelligent Flight Battery)  • Protection Functions: Over-voltage, over-charge, under-voltage and over-temperature protection.  • Charging Safety: AC wire protection, power wire protection, and charge connector protection  **Relay signal transmission system specs**  • Fully independent signal relay, Internal battery Capacity min 6500 mAh, Operating Time min 4 hours, Charging Time: max 3 hours  • Operating Frequency 2.4000-2.4835 GHz, 5.725-5.850 GHz, Max Transmission Distance 4 km (MIC/KCC/CE), 7 km (FCC) (unobstructed, free of interference, and at a flight altitude of 2.5 m)  • IP Rating min IP55  **RTK station specs**  • D-RTK2 or eqivalent, compatible with drones RTK system, with tripod  • Simultaneously receive GPS: L1 C/A, L2, L5  BEIDOU: B1, B2, B3, GLONASS: F1, F2, Galileo: E1, E5A, E5B • Positioning Accuracy: Single Point – Horizontal 1.5 m(RMS), Vertical 3.0 m(RMS), RTK Horizontal 1 cm+ 1 ppm(RMS), Vertical 2 cm+ 1 ppm(RMS)  • IP Rating: min IP65  **Auxiliary mapping system specs**  • Capable of large-scale precision mapping and spraying mission paths preparation in forestry, nurseries and orchard and for application map preparation, model DJI Mavic 3M with Enterprise Battery kit or equivalent (include drone with cameras, remote, charger and charging hub and total of four flight batteries and software)  • Mapping camera RGB min 20Mpix, G,R,RE,NIR min 5Mpix,  • Positioning: GPS + Galileo + BeiDou + GLONASS, with RTK module supplied • Online software/portal for map generation and spraying mission prep tool, with min 1year access  **Power Generator specs** • model FV17001TRE or eqivalent, gasoline single phase 230V 50Hz, electrostart, Nominal Power minimum 14,9kW, Peak Power minimum 16,5kW, Prime Current minimum 63A, AVR voltage regulation, Overload protection, Oil pressure sensor, Silencer with exhaust adapter  • Socket 230 V 16 A and Socket 230 V 63 A, with cables for supplying electric power to fast battery charger |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **All items** | **Delivery** of all items to following address: “Forest Estate” Sremska Mitrovica, Parobrodska 2, Sremska Mitrovica, Republic of Serbia. |  |  |  |
| **All items** | **Installation and testing** of all functions of the instrument, to manufacturers standard on samples commonly used for the corresponding instrument.  Installed equipment must be tested as system, compatible with existing system. |  |  |  |
| **All items** | **Technical documentation** for equipment as per manufacturers standard (Operating manuals/ Users Guide/ Equipment operating instructions/ Cleaning procedures/ Maintenance procedures/ Calibration procedures) upon delivery. |  |  |  |
| **All items** | **Warranty**  Warranty period 365 days from the issuance of PAC (Provisional Acceptance Certificate) in accordance with article 32 SC and GC of the Contract.  Offer must include service description including:   * Letter of consent and certificates of Service organisation officially certified by the equipment manufacturer for maintenance and delivery, with at least 2 certified technicians, incl. contact data, names, postal address, telephone number, fax number and e-mail address. * Letter of consent and certificates of Training centre with at least 2 training instructors certified by manufacturer and certified by EASA / ICAO for UAS Pilot Licensing and Specific operations risk assessment * Guaranteed that any requests for services will be responded within 48 hours. * Guarantee that all items can be repaired or alternatively replaced as per manufacturers warranty and maintenance terms and conditions. * Letter of confirmation that genuine spare parts and consumables will be available for a period of minimum 3 years from the date of final acceptance of the equipment. |  |  |  |
| **All items** | **Commercial warranty**  365 days from the issuance of FAC (Final Acceptance Certificate) in accordance with the conditions laid down in Article 32 of the General Conditions and Article 33 of the Special Conditions.  Detailed description of the organisation of the proposed service and description of the Manufacturer’s commercial warranty shall be included in the offer. |  |  |  |

**<Signature of authorised representative of the legal entity >**

**< Name and position of authorised representative of the legal entity >**

**< Date >**