
**Ministry of Works and Human Settlements
Royal Government of Bhutan**

Request for Quotation for Supply of Goods

**Supply of an Unmanned Aerial
Vehicle and Accessories**

Contract Package Number: BT-MWHS-308332-GO-RFQ

DES/FEMD/50/2022-2023/

Date: 15/08/2022

Invitation for Quotation (IFQ) through Shopping (National)

Project title: Strengthening Risk Information for Disaster Resilience in Bhutan (P175081).

Source of Funding: World Bank [100%]

Contract Ref: **BT-MWHS-308332-GO-RFQ**

To:

(Insert Name and address of the Supplier purchasing the IFQ document)_____

Dear Sir/Madam,

1. You are invited to submit your priced bid for the supply of the following items:

| SI. No. | Item | Quantity | Unit |
|---------|---|----------|------|
| 1 | Unmanned Aerial Vehicle (Equivalent to DJI Phantom 4RTK SE combo or higher) | 1 | No. |
| 2 | D-RTK 2 base station | 1 | No. |
| 3 | Low Noise propellers | 2 | Sets |
| 4 | Battery Charging hub | 1 | No |
| 5 | Propeller guard | 1 | Set |
| 6 | Agisoft Metashape Professional Edition (node-locked license) | 1 | No. |

2. The bidder(s) must quote for the item under this request. Priced quotations will be evaluated and contract awarded to the firm offering the lowest evaluated total cost. Price quoted for after sales services/maintenance shall form a part of the contract but will not be added to the total contract amount.
3. The bidder(s) shall submit one original of the priced quotation with the Form of Bid, clearly marked ORIGINAL. In addition, the bidder(s) should also submit

one copy marked as COPY. The quotation including all documents in the attached format should be sealed in an envelope and addressed to and delivered at the following address:

Your quotation in the required format should be addressed and submitted to:

Chief Engineer/RIR Project Focal, Flood Engineering and Management,
Ministry of Work and Human Settlements, Thimphu, Bhutan.

4. The deadline for receipt of your quotation(s) by the purchaser at the indicated address is 29/08/2022 at 10:30 AM (BST).
5. Bids shall be accompanied by a bid security of Nu. 25,000 in the form of cash warrant, demand draft or unconditional Bank Guarantee valid till 29th October, 2022. Any bid not accompanied by bid security shall be treated as non-responsive.
6. Quotation by fax or by electronic means **are not** acceptable.
7. The quotation should be submitted as per the following instructions and in accordance with the attached Contract. The attached Terms and Conditions of Supply is an integral part of the Contract.
 - a) PRICE: all prices shall be quoted in Ngultrum. The quoted price shall be inclusive of all related costs including taxes, duties and other levies to the final place of delivery. The final place of delivery is: Flood Engineering and Management, Ministry of Work and Human Settlements, Thimphu, Bhutan.
 - b) EVALUATION OF QUOTATION: offers determined to be substantially responsive to the technical specifications will be evaluated by comparison of their quoted prices. In evaluating the quotations, the purchaser will determine for each quotation the evaluated price by adjusting the priced quotation by making any correction for any arithmetical errors as follows;
 - (i) where there is a discrepancy between amounts in figures and in words, the amount in words will govern;

(ii) where there is discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted shall govern unless in the opinion of the Employer there is an obviously gross misplacement of the decimal point in the unit rate, in which case the line item total as quoted shall govern, and the unit rate shall be corrected.

(iii) if the supplier refuses to accept the correction, the quotation will be rejected and the bid security forfeited.

c) AWARD OF PURCHASE ORDER: the award will be made to the bidder who has offered the lowest evaluated price that meets the specifications. The successful bidder(s) will sign a contract as per attached form of contract and terms and conditions of supply.

d) VALIDITY OF THE OFFERS: the quotation(s) shall be valid for a period of 60 days from the deadline for receipt of quotation(s).

8. Further information can be obtained from:

RIR Project Focal, Flood Engineering and Management, MoWHS, Thimphu, Bhutan, Mobile: +975-17450418 Email: dorjiwangmo@mowhs.gov.bt

9. The Royal Government of Bhutan has received a grant of USD 3.51 million towards the cost of strengthening disaster preparedness and response capacity project and intends to apply part of the proceeds of this grant to eligible payments under the contract for which this invitation for quotations is issued.

10. The quotation(s) will be opened in the presence of bidders or their representatives who choose to attend at conference hall of flood engineering and management division, MoWHS on 29/08/2022 at 2:30 PM(BST).

11. The Purchaser is not bound to accept the lowest bid and reserves the right to accept or reject any or all the bids without assigning any reason whatsoever.

12. The Purchaser will notify the winning bidder of the award of contract prior to the expiry of quotation validity period. The terms of the accepted offer shall be incorporated in the supply order (sample form attached).

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13. The Goods supplied should have a minimum Warranty/guarantee of 12 months from the date of delivery.
 14. The Supplier shall be required to submit a performance security of 10% of the quoted price in the form of cash warrant, demand draft or unconditional Bank Guarantee issued by a financial institution located in Bhutan, which shall be furnished upon signing the contract. Performance security shall be valid till the end of warranty period and will be returned after the end of warranty period.

Schedule of Items and Priced Quotation (Bid form)

| Sl. No. | Item Description | Unit | Qty | Unit Rate (Nu.) | Total Amount (Nu.) |
|--|---|------|------|-----------------|--------------------|
| 1 | Unmanned Aerial Vehicle (Equivalent to DJI Phantom 4RTK SE combo or higher) | 1 | No. | | |
| 2 | D-RTK 2 base station | 1 | No. | | |
| 3 | Low Noise propellers | 2 | Sets | | |
| 4 | Battery Charging hub | 1 | No | | |
| 5 | Propeller guard | 1 | Set | | |
| 6 | Agisoft Metashape Professional Edition (node-locked license) | 1 | No. | | |
| <p>Total Amount for Supply of Goods to Purchaser (Including taxes and all related costs) = Nu.</p> <p>Goods to be supplied to RIR project focal, Flood engineering and Management Division, MoWHS, Thimphu.</p> | | | | | |

| | |
|--------------------------------|--|
| Total Amount in Nu. (in words) | |
| Delivery period | Within 90 days from the date of issue of the Purchase Order by the Purchaser |
| Warranty Provided | 12 Months from date of supply or commissioning of the Goods. |

| | |
|-------------------------|-------------------------------|
| (Signature of Supplier) | (Supplier's Official Stamp) |
| Name of Supplier: | Address/Contact No./email ID: |

| | |
|-------|--|
| | |
| Date: | |

The Supplier is required to mention make / model (as applicable) of the goods to be supplied and must attach the appropriate original printed literature / brochures for the various items listed.

Technical Specification of the Goods Required

Unmanned Aerial Vehicle and Accessories ((Equivalent to Phantom 4RTK or higher)

| Aircraft | | |
|-----------------|--|---|
| 1 | Takeoff Weight | 1391g or less |
| 2 | Diagonal Distance | 350 mm |
| 3 | Max Service Ceiling Above Sea Level | 19685 ft(6000m) |
| 4 | Max Ascent Speed | 6 m/s (automatic flight); 5m/s (manual control) |
| 5 | Max Descent Speed | 3 m/s |
| 6 | Max Speed | 32 mph (50kph) (P-mode) 36 mph (59kph) (A mode) |
| 7 | Max Flight Time | Approx. 30 minutes (Equivalent or higher) |
| 8 | Operating Temperature Range | 0 °C to 40 °C (32 °F to 104°F) |
| 9 | Operating Frequency | 2.400 GHz to 2.483 GHz (Europe, Japan, Korea) 5.725 GHz to 5.850 GHz (United States, China) |
| 10 | Transmission Power (EIRP) | 2.4 GHz CE (Europe) / MIC(Japan)/ KCC (Korea) : < 20 dBm 5.8 GHz SRRC (China) / FCC (United States) / CC (Taiwan, China) : <26 dbm |

| | | |
|---------------|---------------------------------|---|
| 11 | Hover Accuracy Range | <p>RTK enabled and functioning property : Vertical : $\pm 0.1\text{m}$; Horizontal : $\pm 0.1\text{m}$</p> <p>RTK disabled Vertical : $\pm 0.1\text{m}$ (with vision positioning); $\pm 0.5\text{m}$ (with GNSS positioning) Horizontal: $\pm 0.3\text{ m}$ (with vision positioning); $\pm 1.5\text{ m}$ (with GNSS positioning)</p> |
| 12 | Image Position Offset | The position of the camera center is relative to the phase center of the onboard D-RTK antenna under the aircraft body's axis: (36,0, and 192mm) already applied to the image coordinates in Exif data. The positive x,y, and z axes of the aircraft body point to forward, rightward, and downward of the aircraft, respectively. |
| Camera | | |
| 1 | Sensor | 1" CMOS; Effective pixels: 20M |
| 2 | Lens | FOV 84°; 8.8mm/24 mm(35 mm format equivalent: 24 mm) ; f/2.8 – f/11, auto focus at 1m- ∞ |
| 3 | ISO Range | Video:100-3200(Auto) 100-6400(Manual) ; Photo:100-3200(Auto) 100-12800(Manual) |
| 4 | Mechanical Shutter Speed | 8 - 1/2000 s |
| 5 | Electronic Shutter Speed | 8 - 1/8000 s |
| 6 | Max Image Size | 4864×3648 (4:3) ; 5472×3648 (3:2) |
| 7 | Video Recording Modes | H.264, 4K : 3840×2160 30p |

| | | |
|-----------------------------------|------------------------------------|---|
| 8 | Photo Format | JPEG |
| 9 | Video Format | MOV |
| 10 | Supported File Systems | FAT32 (≤ 32 GB) ; exFAT (> 32 GB) |
| 11 | Supported SD Cards | MicroSD, Max Capacity: 128 GB. Class 10 or UHS-1 rating required Write speed ≥ 15 MB/s |
| 12 | Operating Temperature Range | 32° to 104° F (0° to 40°C) |
| Intellegent Flight Battery | | |
| 1 | Capacity | Forward/backward/Left/Right: 0.7-40m |
| 2 | Voltage | Forward/Backward/Downward: 65°(H), 50° (V) Left./Right/Upward: 75°(H),60°(V) |
| 3 | Battery Type | Surfaces with clear patterns and adequate lighting(>15 lux) |
| 4 | Energy | 89.2 Wh |
| 5 | Net Weight | 468 g |
| 6 | Charging Temperature Range | 14° to 104°F(-10° to 40°C) |
| 7 | Max charging Power | 160 W |

| Remote Controller | | |
|--------------------------|---|--|
| 1 | Operating Frequency | 2.400 GHz-2.483 GHz(Europe,Japan,Korea) 5.725 GHz-5.850 GHz(United States, China) |
| 2 | Transmission Power (EIRP) | 2.4 GHz CE / MIC / KCC : < 20 dBm 5.8 GHz SRRC / FCC : < 26 dBm |
| 3 | Max Transmission Distance | FCC : 4.3 mi(7 km) ; SRRC / CE / MIC / KCC : 3.1 mi(5 km) (Unobstrcted, free of interference) |
| 4 | Power Consumption | 16 W(typical value) |
| 5 | Display | 5.5 inch screen, 1920×1080, 1000 cd/m ² , Android System Memory 4G RAM+16G ROM |
| 6 | Operating Temperature Range | 32° to 104° F (0° to 40°C) |
| GNSS | | |
| 1 | Single-Frequency, High-Sensitivity GNSS Module | GPS+BeiDou+Galileo (Asia) ; GPS+GLONASS+Galileo (other regions) |
| 2 | Multi-Frequency Multi-System High-Precision RTK GNSS | Frequency Used : GPS : L1/L2 ; GLONASS : L1/L2 ; BeiDou : B1/B2 ; Galileo : E1/E5a First-Fixed Time : < 50 s Positioning Accuracy: Vertical 1.5 cm + 1 ppm (RMS) ; Horizontal 1 cm + 1 ppm (RMS) 1 ppm means the error has a 1mm increase for every 1 km of movement from the aircraft. |
| GNSS Receiver | | |

| | | |
|---------------------------------------|-----------------------------------|--|
| 1 | GNSS Frequency | Simultaneously receive : GPS: L1 C/A, L2, L5 BEIDOU: B1, B2, B3 GLONASS: F1, F2 Galileo: E1, E5A, E5B |
| 2 | 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) 1 ppm: For every 1 km increase in distance, the accuracy will be 1 mm less. For example, the horizontal accuracy is 1.1 cm when the receiving end is 1 km away from the base station. |
| 3 | Positioning Update Rate | 1 Hz, 2 Hz, 5 Hz, 10 Hz and 20 Hz |
| 4 | Cold Start | < 45 s |
| 5 | Hot Start | < 10 s |
| 6 | Recapture Time | < 1 s |
| 7 | Initialization Reliability | > 99.9% |
| 8 | Differential Data Format | RTCM 2.X/3.X |
| Communication and Data Storage | | |
| 1 | Data Link | OcuSync, Wi-Fi, LAN, 4G |
| 2 | Operating Frequency | 2.400 GHz to 2.483 GHz (China, United States, Australia, Europe, Japan, Korea) 5.725 GHz to 5.850 GHz (China, United States, Australia) |
| 3 | EIRP | OcuSync 2.4 GHz SRRC (Mainland China) / CE (Europe) / MIC (Japan) / KCC (Korea): < 20 dBm FCC (United |

| | | |
|--|-------------------------------|--|
| | | States, Australia) / NCC (Taiwan, China): < 26 dBm 5.8 GHz FCC (United States, Australia) / SRRC (Mainland China) / NCC (Taiwan, China): < 26 dBm Wi-Fi 2.4 GHz SRRC (Mainland China) / CE (Europe) / MIC (Japan) / KCC (Korea): < 20 dBm FCC (United States, Australia) / NCC (Taiwan, China): < 22 dBm 5.8 GHz FCC (United States, Australia) / SRRC (Mainland China) / NCC (Taiwan, China): < 22 dBm |
| 4 | Communication Distance | Operating Mode 1/3 SRRC/NCC/FCC/MIC/KCC/CE: 2 km (Unobstructed and free of interference, when the D-RTK 2 Mobile Station is used as a base station and the distance from the D-RTK 2 antenna to the bottom of the tripod is 1.8 m, when the difference in height between the remote controller and D-RTK 2 is less than 2 m, and when the remote controller is 1.2 m from ground level) Operating Mode 4 Between the aircraft and mobile station: NCC/FCC: 7 km; SRRC/MIC/KCC/CE: 5 km Between the remote controller and mobile station: 200 m (Unobstructed and free of interference at a flying altitude of about 120 m, when the distance from the D-RTK 2 antenna to the bottom of the tripod is 1.8 m, and when the remote controller is 1.2 m from ground level) |
| 5 | Memory Capacity | 16 GB |
| IMU | | |
| 1 | Features | Built-in high-precision 6-axis accelerometer D-RTK 2 movement monitoring Sloping measurements electronic bubble level |
| Operation and Maintenance Services | | |
| Operation and Maintenance Services to be provided by the supplier. | | |
| Warranty | | |
| All the accessories must have a warranty of 12 months | | |

| | |
|-------------------------|--------------------|
| (Signature of Supplier) | (Supplier's Stamp) |
| Name of Supplier: | |
| Date: | |

Documents required to be submitted as part of the Quotation

The original and *copy(ies)* of quotation submitted by the Bidder shall comprise the following:

- (a) The bidder should be in the similar line of business.
- (b) A duly completed and signed priced quotation as per the Schedule of Items.
- (c) A valid Trade License¹;
- (d) A valid Tax Clearance Certificate;
- (e) The required bid security;
- (f) Technical Specification of the Goods to be supplied;
- (g) Any other requirements specified in this document

Terms and Conditions for the Supply of Goods and Payment.

The Terms and Conditions hereinafter may only be varied with the written agreement of the Purchaser and no terms and conditions put forward at any time by the Supplier shall form any part of the Contract.

1. The Supplier shall be required to submit a performance security of 10% of the quoted price in the form of cash warrant, demand draft or unconditional Bank Guarantee issued by a financial institution located in Bhutan, which shall be furnished upon signing the contract. Performance security shall be valid till the end of warranty period and will be returned after the end of warranty period.
2. The supply of the goods and related services shall be completed within 90 days from the date of issue of the Purchase Order, or the signing of the contract (where applicable).
3. The Supplier shall agree to supply/perform the required after sales services/maintenance at the quoted price agreed in the contract.
4. The Purchaser shall arrange payment of the Invoice, within thirty (30) days upon submission of original Invoice and against the actual supplied quantities of goods as listed in the Purchase Order.
5. The quoted price shall include all taxes, duties, insurance and any other costs involved and nothing extra shall be paid.
6. Any goods found defective during the warranty period shall be replaced/repaired by the supplier at his cost. If the supplier fails to rectify and or replace the defective goods, the purchaser shall do it at the cost of the supplier.
7. The supplier shall supply the Goods required within 3 months from the date of placement of the purchase order or signing of contract. The supplier shall pay liquidated damages at the rate of 0.1% per day for each day of delay to a maximum of 10% of the quoted price.
8. The Purchaser may, by written notice, terminate the Purchase Order (or Contract if applicable) in whole or in part at any time for its convenience:
 - a. if the Supplier fails to perform any other Terms and conditions specified with the Purchase Order, or exceeds the maximum amount of liquidated damages.
 - b. if the Supplier fails to perform any other obligation(s) under the Purchase Order, or
 - c. if the Supplier does not take any remedial action within a period of (7) seven calendar days after receipt of a notice of default from the Purchaser specifying the nature of the default(s), or

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- d. if the Supplier, in the judgment of the Purchaser, has engaged in any corrupt or fraudulent practices in competing for or in executing the tasks under this Purchase Order; and
9. The Supplier shall provide the warranty, as stipulated in the Quotation document, for the goods to be supplied and confirm that if any faults are detected within the warranty period in the supplied/installed goods, the Supplier shall be bound to rectify the fault or replace the goods as the case may be. The security deposit shall be used to cover the cost of supplies not delivered or defective items not replaced or rectified.

Contract Agreement

[The successful Bidder shall fill in this form in accordance with the instructions indicated]

THIS CONTRACT AGREEMENT made the *[insert number]* day of *[insert month]*, *[insert year]*,

BETWEEN

- (1) *[insert complete name of Purchaser]*, a *[insert description of type of legal entity, for example, an agency of the Ministry of of the Government of Bhutan, or corporation incorporated under the laws of Bhutan]* and having its principal place of business at *[insert address of Purchaser]* (hereinafter called “the Purchaser”), and
- (2) *[insert name of Supplier]*, a corporation incorporated under the laws of *[insert: country of Supplier]* and having its principal place of business at *[insert: address of Supplier]* (hereinafter called “the Supplier”).

WHEREAS the Purchaser invited Bids for certain Goods and ancillary services, viz., *[insert brief description of Goods and Services]* and has accepted a Bid by the Supplier for the supply of those Goods and Services in the sum of *[insert Contract Price in words and figures, expressed in the Contract currency/ies]* (hereinafter called “the Contract Price”).

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.
2. The following documents shall constitute the Contract between the Purchaser and the Supplier, and each shall be read and construed as an integral part of the Contract, viz.:
 - (a) This Contract Agreement;
 - (b) Terms and Conditions;
 - (c) Technical Requirements (including Schedule of Supply and Technical Specifications);
 - (e) The Supplier’s Bid and original Price Schedules;
 - (f) The Purchaser’s Notification of Award of Contract;
 - (g) The form of Performance Security;
 - (h) The form of Bank Guarantee for Advance Payment;

(i) *[insert here any other document(s) forming part of the Contract]*

3. This Contract shall prevail over all other Contract documents. In the event of any discrepancy or inconsistency within the Contract documents, then the documents shall prevail in the order listed above.

4. In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to provide the Goods and Services and to remedy defects therein in conformity in all respects with the provisions of the Contract.

5. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the Goods and Related Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of Bhutan on the day, month and year indicated above.

For and on behalf of the Purchaser

Signed: *[insert signature]*

in the capacity of *[insert title or other appropriate designation]*

in the presence of *[insert signature]*

[insert identification of official witness]

For and on behalf of the Supplier

Signed: *[insert signature of authorized representative(s) of the Supplier]*

in the capacity of *[insert title or other appropriate designation]*

in the presence of *[insert signature]*

[insert identification of official witness]

Bid Security (Bank Guarantee)

[The Bank shall fill in this Bank Guarantee Form in accordance with the instructions indicated.]

[insert Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: _____ *[Name and Address of Purchaser]*

Date: _____

BID GUARANTEE No.: _____

We have been informed that *[insert name of the Bidder]* (hereinafter called "the Bidder") has submitted to you its Bid dated (hereinafter called "the Bid") for the execution of *[insert name of Contract]* under Invitation for Bids No. *[insert IFQ number]* ("the IFQ").

Furthermore, we understand that, according to your conditions, Bids must be supported by a Bid Guarantee.

At the request of the Bidder, we *[insert name of Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[insert amount in figures]* (*[insert amount in words]*) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the Bid conditions, because the Bidder:

- (a) has withdrawn its Bid during the period of Bid validity specified by the Bidder in the Form of Bid; or
- (b) having been notified of the acceptance of its Bid by the Purchaser during the period of Bid validity, (i) fails or refuses to execute the Contract Form; or (ii) fails or refuses to furnish the Performance Security, if required, in accordance with the Instructions to Bidders.

This guarantee will expire: (a) if the Bidder is the successful Bidder, upon our receipt of copies of the contract signed by the Bidder and the Performance Security issued to you upon the instruction of the Bidder; or (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy of your notification to the Bidder of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of the Bidder's Bid.

Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

[signature(s)]

Sample Manufacturer's Authorization

[The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and be signed by a person with the proper authority to sign documents that are binding on the Manufacturer. The Bidder shall include it in its bid, if so indicated in the BDS.]

Date: *[insert date of Bid Submission]*

Invitation for Bid No.: *[insert IFB number]*

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

To: *[insert complete name of the Purchaser]*

WHEREAS

We *[insert complete name of the Manufacturer]*, who are official manufacturers of *[insert type of Goods manufactured]*, having factories at *[insert full address(es) of the Manufacturer's factory/ies]*, do hereby authorize *[insert complete name of Bidder]* to submit a Bid in relation to the Invitation for Quotation indicated above, the purpose of which is to provide the following Goods, manufactured by us, namely *[insert name and/or brief description of the Goods]*, and subsequently to negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with Clause 29 of the General Conditions of Contract, with respect to the Goods offered by the above firm.

Signed: *[insert signature(s) of authorized representative(s) of the Manufacturer]*

Name: *[insert complete name(s) of the authorized representative(s) of the Manufacturer]*

Title: *[insert title(s) of the authorized representative(s) of the Manufacturer]*

Duly authorized to sign this Authorization for and on behalf of *[insert complete name of the Bidder]*

Dated on the *[insert number]* day of *[insert month]*, *[insert year]*.