Uttarakhand Landslide Mitigation and Management Center (ULMMC)
Under Department of Disaster Management & Rehabilitation (Government of Uttarakhand)
4 Subhash Road, Uttarakhand Secretariat, Dehradun - 248001, Uttarakhand
Email id: ulmmc.ddn@gmail.com

Govt. of Uttarakhand

EXPRESSION OF INTEREST

REFERENCE No.134 / 12 /ULMMC/2023 **DATE:** 26/07/2023

NAME OF CLIENT: Uttarakhand Landslide Mitigation & Management Center

Assignment Title: Empanelment of Firms/Institutions for conducting LiDAR survey in Uttarakhand state..

The ULMMC invites eligible firms for the above assignment through Expression of interest (EOI) method. Details can be obtained from the website www.uktenders.gov.in. Last date for submission of Proposal is ……30th August.,2023. Proposals must be submitted online on the website www.uktenders.gov.in. Further details may be obtained from the EOI document.

Dr. Ranjit Kumar Sinha
Director General

Signature Not Verified
Digitally signed by SARTHAK CHAUDHARY
Date: 2023.07.28 17:24:11 IST
Location: Uttarakhand UT

Request for Expression of Interest (EOI)

Procurement of:

Empanelment of Firms/Institutions for conducting LiDAR survey in Uttarakhand state.

EOI No.: 02/ULMMC/EOI/2023

Services for: Empanelment of Firms/Institutions for conducting LiDAR survey in Uttarakhand state.

Client: ***Director General, Uttarakhand Landslide Mitigation & Management Center (ULMMC), Dehradun, Uttarakhand***

Country: *INDIA*

Issued on: *28th July ,2023*

DISCLAIMER

1. Though adequate care has been taken while issuing this EOI offer Document, the firms/Institutions should satisfy himself that the document is complete in all respects. Intimation of any discrepancy shall be given to this office (as mentioned below) immediately. If no intimation is received by this office within 3 days from the date of issue of the offer Document, then this office shall consider that the document received by the firms/Institutions is complete in all respects and that the firms/Institutions is satisfied that the offer Document is complete in all respect.

2. ULMMC reserves the right to change any or all of the provisions of this offer Document before date of submission. Such changes would be intimated to all parties procuring this offer Document before date of submission.

3. ULMMC reserves the right to reject any or the entire offer without assigning any reasons whatsoever. No correspondence will be entertained on this account.

Director General
ULMMC, Dehradun

Uttarakhand Landslide Mitigation and Management Center (ULMMC)
Under Disaster Management & Rehabilitation (Government of Uttarakhand)
4 Subhash Road, Uttarakhand Secretariat, Dehradun - 248001, Uttarakhand

NIT No.: 134/12/ULMMC/2023 **Date:** 28.07.2023

INVITATION FOR FIRMS/INSTITUTIONS

Empanelment of Firms/Institutions for conducting LiDAR survey in Uttarakhand state.

1. INVITATION TO BID

1.1. This EOI Document is for short listing suitable qualified firms/Institutions and empaneling of firms/Institutions for conducting LiDAR survey in Uttarakhand state. This will primarily involve: -

i. One set of unclassified LAS files for specifications.
ii. One set of classified LAS files in accordance with the tiling schema.
iii. DEM's (hydro flattened bare earth) of 0.5 m accuracy (on ellipsoidal heights) at regular spacing of 0.5metredelivered in ESRI floating point GRID format and Interleaved by Line (BIL) format in GeoTIFF file format. The DEM's must also be delivered in the project tiling and required naming schema.
iv. DEM (on MSL heights).
v. One set of 0.5-meter intensity imagery in Geo TIFF file format.
vi. 5 cm GSD Ortho Photo.
vii. One set of Metadata for each data deliverable.
viii. DSM as per detailed specifications mentioned.
ix. The firm must deliver raw datasets and LIDAR system data, including orthometric heights for each point above MSL datum, in comma-delimited ASCII files in x, y, and z format. The firm also must flag raw data sets from side lap and overlap areas of separate flight lines. The firm must submit raw datasets in project tiling or data models matching those of the DEM and DSM. The firm must also deliver Raw data captured by various sensors and instruments.
x. All Ground control points (GCPs) provided/used for Data Acquisition & Processing. (m)Contours at 1-meter vertical interval. All deliverables must conform to the projection, datum, and coordinate system specified in the contract. File sizes cannot exceed 1 gigabyte, unless otherwise specified by the client. Each file must be organized to facilitate data manipulation and processing.

1.2. Interested agencies are advised to study this EOI document carefully before submitting their proposals in response to the EOI Notice. Submission of a proposal in response to this notice shall be deemed to have been done after careful study and examination of this document with full understanding of its terms, conditions and implications. EOI Tender fee of Rs.5000.00 in original shall be submitted in the Office of Uttarakhand

Landslide Mitigation and Management Center (ULMMC) office on all working days between 28th July,2023 (12:00Hrs) to 30th August,2023 (17:00 Hrs.) either by registered post/Speed post or by hand. Only those bids will be entertained whose EOI Tender fee is received before 30th August,2023 (17:00 Hrs.) ULMMC will not be held responsible for the postal delay, if any, in the delivery of the document or non-receipt of the same. The Bidder shall furnish EOI tender fee for the amount as mentioned above in form of Demand Draft on a Nationalized/Scheduled Bank in favor of **"Additional Director General, ULMMC, Dehradun, Uttarakhand" payable at Dehradun.**

1.3. The complete Proposal should be submitted on or before the Proposal Due Date as specified in Proposal Data Sheet specified in the EOI document. ULMMC shall not be responsible for any delay in receiving the Proposal and reserves the right to reject any or all Proposals without assigning any reason thereof.

1.4. Joint venture(JV) is not allowed for providing services in the project.

1.5. The Empanelment will be for a term of 5 (Five) years from the date of its notification and shall be renewed based on the satisfactory performance.

1.6. Any subsequent corrigenda / clarifications will be made available in Pre-bid meeting on 04th August,2023 (15:30 Hrs.).

1.7. All communications including the submission of bid should be addressed to:
Director,
Uttarakhand Landslide Mitigation & Management center
4th Floor, DDPM tower, Haridwar By-pass road,
Ajabpur Khurd, Dehradun-248001,
Uttarakhand Email: ulmmc.ddn@gmail.com

1.8. The bidder shall also furnish a performance security (if awarded) of 10% of the contract value valid upto 45 days beyond all the performance obligations in the favor of Additional Director General, ULMMC, Dehradun, Uttarakhand in form of bank Guarantee/FDR only.

1.9. Request for Quotation(RFQ) of financial bids will be sent only to empaneled firms (after empanelment) for works by the client.

Director General
ULMMC, Dehradun

Uttarakhand Landslide Mitigation and Management Center (ULMMC)

Under Disaster Management & Rehabilitation (Government of Uttarakhand)

4 Subhash Road, Uttarakhand Secretariat, Dehradun - 248001, Uttarakhand

Govt. of Uttarakhand

NIT No.: 134/12/ULMMC/2023 **Date:** 28.07.2023

2. SCHEDULE OF BIDDING PROCESS

Notice Inviting Tender

National Competitive Bidding

Tender Notice

1.	Name of the Work	Empanelment of Firms/Institutions for conducting LiDAR survey in Uttarakhand state
2.	Mode of submission of bids	Online Tender
3.	EOI Tender Fee & (In INR)	Cost of EOI Tender Document: Rs. 5,000/- *(Rupees five Thousand only) (Nonrefundable)*
4.	Date of publication of Tender online	28.07.2023 at 12:00 Hrs.
5.	Date of Pre-Bid meeting & Address	04.08.2023 at 15:30 Hrs. & 4th floor DDPM Tower, Haridwar By-pass, near Ajabpur Khurd, Dehradun. Uttarakhand.
6.	Last Date/Time for submission of online bids	30.08.2023 (17:00 Hrs.)
7.	Last Date of submission of Tender fees (Hard Copy)	30.08.2023 (17:00 Hrs.)
8.	Date of technical Bid Opening	31.08.2023 (12:00 Hrs.)
9.	Tender fee submission address	Uttarakhand Landslide Mitigation & Management center 4th floor DDPM Tower, Haridwar By-pass, near Ajabpur Khurd, Dehradun-248001, Uttarakhand
10.	Contact no.	+917897788842, +917500109404

Note: Only e-tenders will be accepted.

Further details are available on Uttarakhand Government e-procurement website *http://uktenders.gov.in*

Director General
ULMMC, Dehradun

3. INVITATION FOR PROPOSAL

3.1. This EOI Document is for short listing suitable qualified firms/Institutions and empaneling of firms/Institutions for conducting LiDAR survey in Uttarakhand state.

3.2. Services covered under conducting LiDAR survey of firm –

i. One set of unclassified LAS files for specifications.
ii. One set of classified LAS files in accordance with the tiling schema.
iii. DEM's (hydro flattened bare earth) of 0.5 m accuracy (on ellipsoidal heights) at regular spacing of 0.5metredelivered in ESRI floating point GRID format and Interleaved by Line (BIL) format in GeoTIFF file format. The DEM's must also be delivered in the project tiling and required naming schema.
iv. DEM (on MSL heights).
v. One set of 0.5 meter intensity imagery in Geo TIFF file format.
vi. 5 cm GSD Ortho Photo.
vii. One set of Metadata for each data deliverable.
viii. DSM as per detailed specifications mentioned.
ix. The firm must deliver raw datasets and LIDAR system data, including orthometric heights for each point above MSL datum, in comma-delimited ASCII files in x, y, and z format. The firm also must flag raw data sets from side lap and overlap areas of separate flight lines. The firm must submit raw datasets in project tiling or data models matching those of the DEM and DSM. The firm must also deliver Raw data captured by various sensors and instruments.
x. All Ground control points (GCPs) provided/used for Data Acquisition & Processing. (m)Contours at 1 meter vertical interval. All deliverables must conform to the projection, datum, and coordinate system specified in the contract. File sizes cannot exceed 1 gigabyte, unless otherwise specified by the client. Each file must be organized to facilitate data manipulation and processing.

3.3. A "Single Stage" bidding process will be followed for determining the eligible applicants for empanelment, wherein the applicants would submit their proposal on/ before the Proposal Due Date, as mentioned in the Data Sheet. The applicants shall submit the detailed Proposal for the empanelment of firms/Institutions for conducting LiDAR survey work, as set out in this EOI document.

3.4. This EOI document contains information about the Bidding process, selection process, proposal submission qualification and evaluation process.

3.5. A level of service as specified in this EOI document would be maintained, during the empanelment period, by the empaneled Agencies.

3.6. Interested applicants are required to submit their Proposal for empanelment as per format given in this EOI document. The Proposals will be examined for substantive compliance or responsiveness to the Proposal requirements. The ULMMC will evaluate the Proposals as per the evaluation criteria mentioned in this EOI Document.

3.7. The selection would be based on the marks secured in the Proposal evaluation, and the firms/Institutions shall be empaneled by the ULMMC subject to scoring a minimum of 70 marks in their proposal.

3.8. The complete Proposals should be submitted on or before the Proposal Due Date as specified in Data Sheet specified in the EOI document. ULMMC shall not be responsible for any delay in receiving the Proposal and reserves the right to reject any or all Proposals without assigning any reason thereof.

4. EXPRESSION OF INTEREST

4.1. Duration of the Empanelment

The Empanelment will be for a term of 5 (Five) years from the date of its notification. Firms/Institutions on the panel will be appointed to specific assignments on the basis of a financial proposal, against a defined scope of work.

4.2. Validity of Proposal

The Proposal shall be valid for a period of not less than 180 days from the Proposal Due Date, or any extensions thereof as specified by the ULMMC from time to time.

4.3. Brief Description of the proposal

The ULMMC has adopted a single stage selection process in evaluating the Proposals. Evaluation of those applicants fulfilling the basic criteria as firms/Institutions for conducting LiDAR survey shall be shortlisted.

4.4. General Scope of Work

4.4.1. Detailed Technical Specification

Detailed Scope of Drone\Loco\Trolley mounted LiDAR Survey

4.4.2. Clearances for Flying

As per existing DGCA guidelines for LiDAR survey**.**

4.4.3. Flight Planning

The flight path shall cover the study area completely including enough cross flight lines to eliminate shadowing and allow for proper quality control. Flight line overlap should be 60% or greater, as required, to ensure that there are no data gaps between the usable portions of the swaths. Data collections in high relief terrain should have greater overlap. Any data with gaps between the geometrically usable portions of the swaths will be rejected. The firm shall generally avoid flights during inclement weather which have been known to degrade the accuracy of laser return data. The firm must document flight dates, time, flight altitude, airspeed, scan angle, scan rate, laser pulse rates, and other information deemed pertinent.

4.4.4. Sensor Calibration

The firm must provide calibration certificate of sensor issued by the manufacturer. In addition, the firm must submit evidence that the total LiDAR system was calibrated prior to current project initiation, for the purposes of identifying and correcting systematic errors. Proper system calibration requires repetitive over-flight of terrain features of known and documented size and elevation using flight paths similar to those

that will be used in the Ground Control Survey. The firm must use appropriate ground control to achieve required deliverables as listed above.

4.4.5. Pre-Processing

The raw LiDAR data should be assembled for clipping, filtering, and processing. The elevation data may then be examined and compared to known values and control. Because of the reflective nature of light, it is common for errors to be recorded because of the reflectivity, or lack thereof, from surfaces within the project area. Though a few points within each mission are indeed identified as discrepant, it is an insignificant percentage (usually less than 5%) that should be removed from the data.

4.4.6. Post-Processing

The firm will provide high-resolution, high-accuracy, "bare-earth" ground elevation data at regular spacing (DEM), irregular spacing with mass points and break-lines (DTM), and the elevation data of all top surfaces (DSM) from raw/pre-processed data. To restrict data to ground elevations only, the firm must remove elevation points on bridges, buildings, and other structures and on vegetation, from the LIDAR-derived data. In addition to randomly spaced LIDAR points, before and after removal of data associated with structures and vegetation, the firm must produce bare-earth DEM of 0.5m accuracy. The firm must use Triangular Irregular Network (TIN) linear interpolation procedures, including break lines, when validating the vertical accuracy of the data models. The firm will ensure Proper versioning, file naming and management of data in various Production Cycles.

4.4.7. Quality Control/ Quality Assurance

Quality Control/Quality Assurance (QC/QA) of the LIDAR and/or LiDAR derived data at various stages of Project including validating horizontal and vertical accuracy as per specifications laid down in RFB will be the responsibility of the firm. The client may perform additional QC/QA testing. This shall include (a) Carrying out corrections as per Quality Audit Report and security vetting report provided by ULMMC (b) Facilitating quality audit, stage approvals, security vetting and final acceptance tests by ULMMC (c) Carrying out corrections after security vetting as pointed out by concerned agencies.

4.4.8. LiDAR Point Cloud (data) Specification

<table>
<tr><td>Unclassified Point Cloud</td><td>1. All returns, all collected points, fully calibrated and adjusted to specified vertical datum, by swath. 1 file per swath, 1 swath per file,(file size not to exceed 2GB).
2. Fully compliant LAS v1.2 (or v1.3), point record format with all standard attributes including:
a. Intensity values (native radiometric resolution).
b. Return number.
c. Geo refrencing information in all LAS file headers.
d. GPS times recorded as adjusted GPS time, at a precision sufficient to allow unique timestamps for each pulse.
3. Data is to be provided in the following Vertical Datums:
a. Orthometric (Survey of India Vertical Datum)
b. Ellipsoidal (WGS-84).</td></tr>
<tr><td>Classified Point Cloud</td><td>1. All returns, all collected points, fully calibrated and adjusted to specified vertical datum, and classified as specified below.
2. Fully compliant LAS v1.2 (or v1.3), point record format with all standard attributes including:
a. Intensity values (native radiometric resolution).
b. Return number.
c. Geo refrencing information in all LAS file headers
d. GPS times recorded as adjusted GPS time, at a precision sufficient to allow unique timestamps for each pulse.
e. ALL points not identified as “Withheld” are to be classified.
3. Data is to be provided in the following Vertical Datums:
a. Orthometric (Survey of India Vertical Datum)
b. Ellipsoidal (WGS-84).
d. 4. Tiled delivery, as per Data Supply Specifications below.</td></tr>
<tr><td>Required Point Cloud Classification Level</td><td>a) All classified point cloud data must adhere to the following classification scheme. (The ASPRS scheme of classification can be seen for reference)
b) The minimum number of point classes to be delivered according to this scheme is defined by the Classification Level specified below.
<table>
<tr><th>Number</th><th>Point Class</th><th>Description</th></tr>
<tr><td>0</td><td>Unclassified</td><td>Created, never classified</td></tr>
<tr><td>1</td><td>Default</td><td>Unclassified</td></tr>
<tr><td>2</td><td>Ground</td><td>Bare Ground</td></tr>
<tr><td>3</td><td>Low vegetation</td><td>0-0.3 m (essentially sensor noise)</td></tr>
<tr><td>4</td><td>Medium vegetation</td><td>0.3 - 2m</td></tr>
<tr><td>5</td><td>High vegetation</td><td>> 2 m</td></tr>
<tr><td>6</td><td>Building Structures</td><td>Buildings, sheds etc.</td></tr>
<tr><td>7</td><td>Low/high Points</td><td>Spurious high/low points return (unusable)</td></tr>
<tr><td>8</td><td>Model Key Points</td><td>Reserved for Model key points</td></tr>
<tr><td>9</td><td>Water</td><td>Any Point in Water</td></tr>
<tr><td>10</td><td>Bridge</td><td>Any Bridge or Over pass</td></tr>
</table></td></tr>
</table>

	11	Not Used	Reserved for future definition
	12	Overlap Points	Flight line overlap points
	13 - 31	Not Used	Reserved for future definition

General Ortho –Photograph: -

Description	**Specifications**
Coverage	1. Same as for LiDAR data
Date of Capture	2. Aerial photographs to be acquired concurrently with LiDAR data.
GSD	3. 5 cm
Bands	4. RGB (Three band natural color imagery)
End Overlap	5. 60% minimum
Side Overlap	6. 30% minimum
Collection condition	Same as LiDAR with following additional conditions: - 7. Sun angle no less than 30 degree to minimize shadow 8. The project site has high relief changes therefore photograph should be captured at high sun angle to avoid shadows due to these high relief formations. 9. Cloud free with minimal smoke, smog, fog and dust. 10. Minimum soil moisture and after sufficient gap afterrainfall. 11. Every effort shall be made to avoid breaks within individual flight lines. Where necessary, the entire flight line composed of the resulting segments shall meet all of the requirements set forth in these specifications. Where breaks occur, these shall have an overlap of at least four frames to ensure a stereo model of overlap or tie.
Image format	Uncompressed GeoTIFF
Horizontal accuracy	<= +/- 15 m 95% confidence interval (1.96 x RMSE)
Imagery Product	Seamless mosaic covering the project area and non-overlapping,edge matched tiles.
Radiometric Resolution	Minimum 8 bit per band in accordance with chosen image format
Delivery Dates	As per the project time frame. Raw photograph to be submitted with Raw LiDAR data and processed orthophotograph with final delivery of classified LiDAR point cloud.
Horizontal Datum	The World Geodetic Datum 84 (WGS-84)
Map Projection	The coordinate system for all deliverabl is the Universe Transverse Mercator UTM
Vertical Datum	Orthometric: All deliverables specified below as orthometric will be referenced to the Survey of India Vertical Datum (MSL) Ellipsoid: All deliverables specified below as ellipsoidal will be in terms of the WGS-84 reference frame. The source of the ellipsoidal height control shall be explained in the "Post-Survey Spatial Accuracy Report".

Survey Control	1. Orthophoto generation to use GPS/IMU and ground control information. 2. It is expected that GPS and ground control established for LiDAR component be used for controlling the orthophoto production. If supplemental ground control is obtained the firm should submit that with client for independent check. 3. All raw survey control data used or derived from this contract must be supplied to client to ensure independent Quality Assurance (QA) of the survey operations, and for possible use in other surveysrequiring these. It is therefore essential that all primary ground stations are permanently marked in accordance with the Survey of India standards. 4. The primary ground control and check point surveysmust be referenced to the survey of India local vertical datum specified above comprising Survey ofIndia Bench marks. 5. Survey to establish new primary control shall use techniques to achieve a minimum standard of Survey of India for Densification of geodetic survey or equivalent in international standards. This will bementioned the Project Plan and Project Report submitted to Client. 6. Any systematic bias in elevation data must be corrected and must be reported to client.
Ortho rectification	1. The digital elevation data required for this process Shall be provided by the LiDAR deliverables specified in this RFP. 2. The rectification process shall use the cubic convolution resampling technique to ensure high accuracy and image quality. 3. The mosaicking process shall minimize imagedistortions and smearing and produce a seamlessedge-matched product. 4. Processes will be used during orthophoto productionto avoid the presences of warped and misaligned above ground transportation features. 5. Orthorectified Image tiles shall be tonally balanced prior to generation of an image mosaic. Relative join(misalignment) of transportation features betweenadjacent image chips/tiles shall be within the tolerance defined by the horizontal positional accuracy requirement set out above. 6. The rectification process shall involve a solution of the appropriate photogrammetric equations for each pixel in the output image. It is not preferable tosolve photogrammetric equations at anchor points only and then warp the content of the original image between the anchor points. The firm will describe its approach for ortho- rectification and get it approved from client.
Radiometry	1. All images should be clear and sharp in detail with no light streaks, static marks, scratches, or othernoticeable blemishes. The imagery should be free from defects, such as out-of-focus imagery, and should not contain

	inconsistencies in tone and/or density between individual orthos and/or adjacent sheets. To ensure consistency, the imagery should beradiometrically and geometrically corrected to enable adjacent files to be displayed simultaneously without obvious distinctions between them. 2. The Firm will describe their technical approach to producing radiometry balance and get it approved from ULMMC.

Data Supply Specification

Description	**Specifications**
File naming	File naming per requirements of ULMMC
Coordinate origins for Gridded Data	The origin of all gridded data must be placed on a whole metre coordinate value that will align with the zero (0) origin of the corresponding UTM Zone.
Data Tiling	1. All standard data sets should be supplied as single files where possible and tiled to manageable file sizes if necessary as below: a. 1km x 1km tiles based on UTM coordinates withorigins that align with the zero (0) origin of the UTM Zone. b. The origin of the tile must be placed on a whole metre coordinate value of the south west corner of each tile. 2. A Tile Index is to be provided by the firm in ESRI shape file format. The tile name as specified above must be included as an attribute in the Tile Index file. 3. File naming
GPS Data for occupations of base-stations	1. GPS observation log sheets should include the following details: a. Survey mark id b. Occupation time & date c. Antenna height measurements d. Instrument /antenna types & serial numbers The GPS observation log sheets should be provided in pdf format or Excel spreadsheet if data is captured digitally.
Data Delivery Reports	1. A delivery report describing the contents of the data supplied with every data delivery (interim, staged, final). The delivery report must also contain reference to the metadata supplied within the Delivery.
Metadata	1. No metadata standard is being specified. However, the firm will chose any standard metadata style which confirm firms/Institutions to international standards ISO 191152005 and ISO 19139 2007, and report the same along with their bid. 2. For each supplied data product a complete metadata statement consistent with the chosen system must beprovided in XML format. 3. Metadata must be provided with every delivery including interim, partial and final deliveries. 4. The job will not be completed until the metadata is satisfactorily supplied.

Delivery Media	1. Data should be delivered on External Hard Drive (USB or FireWire). External hard drives will be retained by ULMMC. 2. Data deliveries should be clearly labeled with name of Service Provider, date of supply and list of contents.
Report Formats	1. All reports are to be provided in Word (.doc/.docx) format, Excel Spreadsheet (.xls/.xlsx) or appropriate digital format approved by ULMMC.

4.4.9. Orthophoto Specification

Ortho-rectification	1. The digital elevation data required for this process shall be provided by the LiDAR deliverables specified above. 2. The rectification process shall use the cubic convolution resampling technique to ensure high accuracy and image quality. 3. The mosaicking process shall minimize image distortions and smearing and produce a seamless edge-matched product. 4. Orthorectified Image Chips shall be tonally balanced prior to generation of an image mosaic. Relative join (misalignment) of transportation features between adjacent image chips/tiles shall be within the tolerance defined by the horizontal positional accuracy requirement set out above. 5. The rectification process shall involve a solution of the appropriate photogrammetric equations for each pixel in the output image. It is not preferable to solve photogrammetric equations at anchor points only and then warp the content of theoriginal image between the anchor points. 6. The firm will describe its approach for ortho-rectification.
Radiometry	1. All images will be clear and sharp in detail with no light streaks, static marks, scratches, or other noticeable blemishes. The imagery will be free from defects, such as out-of-focus imagery, and will not contain inconsistencies in tone and/or density between individual orthos and/or adjacent sheets.

4.4.10. Digital Elevation/Surface Model Specifications

Deliverables	**Specifications**
Digital Surface Model (DSM)	a) 50 cm grid Digital Surface Model (DSM) b) The DSM will be generated from the "first return" LiDAR mass point data. This will include ground and non-ground points such as vegetation and buildings. c) Void areas (i.e., areas outside the project boundary but within any tiling scheme) shall be coded using a unique "NODATA" value.

	d) ESRI floating point GRID format.
Digital Elevation Model(DEM)	a) 50 cm grid bare earth Digital Elevation Model (DEM) b) The DEM will be generated from the LiDAR mass point data classified as "Ground" only, so that it defines the "bare earth" groundsurface. c) The DEM generation will employ a Point to TIN and TIN to Rasterprocess with Natural Nearest Neighbour interpolation. d) Hydro-flattening will be undertaken for natural and man-made water bodies and water courses as defined below: 1. Non-tidal water bodies with a surface area greater (>) than 625 m2 2. Water courses greater than 30 m nominal width. 3. Flat and level bank-to-bank with a gradient following the immediate 4. Water courses will break at road crossings and bridges. 5. Sinks must not be filled. 6. The entire water surface edge must be at or immediately below the surrounding terrain. 7. Any additional data layers created for the purposes of hydro- flattening such a masks or break-lines must be provided as shape files. a) Void areas (i.e., areas outside the project boundary but within any tiling scheme) shall be coded using a unique "NODATA" value b) ESRI floating point GRID format.

4.4.11. Project Planning and Reporting Specifications and QualityAssurance Specifications

Quality Control/Quality Assurance (QC/QA) of the LIDAR and DC derived data is primarily theresponsibility of the firm. The process shall include reviews of flight alignments and completeness of supporting data (e.g., cross sections, profiles). The ULMMC may perform additional QC/QA testing if needed. Pragmatic QA specifications would need be agreed by the firm with the ULMMC in regard to intermediate steps of flight operations, LIDAR and DC data acquisition and pre-processed LIDAR data. The derived products will be evaluated for spatial accuracy and general conformation to prescribed requirements.

Project Plan	Project plan detailing work breakdown structure, agreed data capture plans, project milestones and delivery schedules, progress reporting schedules etc within 10 days after effective contract date. A LIDAR and DC system data report;:The LIDAR and DC system data report must include discussions of: data processing methods to be used, including the treatment of artifacts; final LIDAR pulse and scan rates; scan angle;

	capability for multiple returns from single pulses; accuracy and precision of the LIDAR data acquired; a digital index showing the orientation of all data tiles within the project site with tile labels corresponding to the external hard disc identification numbers/file names, accuracy and precision of the LIDAR data acquired, accuracy of the topographic surface products; companion imagery if any, any other data deemed appropriate. Prior to data collection, the firm must submit: 1. A map (SoI maps are desirable for this purpose) showing the study area boundaries and flight path, at a medium scale (1:50,000). 2. Documentation specifying altitude, airspeed, scan angle, scan rate, LIDAR pulse rates, and other flight and equipment information deemed appropriate;
Fundamental Spatial Accuracy Validation (FSA)	Vertical Accuracy Validation 1. Specify fundamental vertical accuracy of the point cloud dataset using check points located in open and flat terrain. 2. The vertical accuracy of the point cloud dataset is to be tested using a TIN surface constructed from bare-earth LiDAR points compared against ground survey check points. 3. Check points are to be surveyed independently of any LiDAR GPS operations. 4. The number of check points (locations) is dependent onthe extent of the survey. The following strategy should be used as a guide: Check points must be established to adequately cover the full extent of the survey area, and be representative of the project area landscape. 5. The proposed check point survey design must be submitted with the Project Plan, and approved by client prior to implementation. Acceptance of the post-survey spatial accuracy report discussed above will depend on thequality, number and distribution of these check points. 6. If additional independent validation is required, data should be assessed in accordance with mutually agreeable terms. Horizontal Accuracy Validation 1. The onus for reaching the required accuracy lies with the data supplier. Independent accuracy assessments may also be carried out by ULMMC. 2. Firm is required to report on the expected horizontal accuracy of elevation products as determined from system and sensor calibration studies. This must be got approved from ULMMC before actual flying. 3. In the above circumstances a “compiled to meet” statement of horizontal accuracy at 95 percent confidence

	should be reported. 4. The firm may use feature based horizontal accuracy measures to report horizontal accuracy and should notify the approach in post survey spatial accuracy report. a. If additional independent validation is required, data should be assessed in accordance with mutually agreeable terms project area to demonstrate the accuracy of classified data. These profiles should consist of data from at least two swaths. The profiles have to be at 1:1 scale for screen resolution so that full scale view can be seen. The profiles are to be submitted as .jpg and a shape file showing their location on the data. Classification accuracy tests should be presented in the form of an error matrix for each specified class reporting errors of omission and commission generated from randomly selected points.
Classification Consistency Validation	Point classification is to be consistent across the entire project. Noticeable variations in the character, texture, or quality of the classification between tiles, swaths, lifts, or other non- natural divisions will be cause for rejection of the entire deliverable.
Spatial Distribution of pointsvalidation Modify as per abovespecification	1. In order to ensure uniform densities throughout the dataset the following test is to be conducted and results submitted to Client: a. A regular grid, with cell size equal to the design NPS*4 to be laid over the data. b. Check how many percent cells in the grid contain at least 16 32 LiDAR point. This should not be less than 90%. c. Above assessment is to be made against single swath, first return data located within the geometrically usable center portion (i.e. ~90%) of each swath.
Pre-Survey Quality Assurance Plan	1. The firm shall prepare and submit to the Contracting Authority a Quality Assurance Plan that conforms to standard practices and generally complies with ISO 9001. The plan must address the organization and management of the project, work procedures, environmental considerations, safety and risk control and test procedures. The plan must also detail the procedures to be used in verifying that the deliverables meet the required specification including: • The procedures and methodologies to be used to verify that the deliverables meet the required specifications. • Details of proposed calibration checks and methodology tobe used to establish both reference stations and ground testsites. 2. A system calibration report. The Project Plan must be submitted and accepted prior to

	commencementof the survey.
Post-flight report	A flight report: The flight report must document mission date, time, flight altitude, airspeed, and other information deemed pertinent. The report must include information about GPS-derived flight tracks, provide a detailed description of final flight line parameters and GPS controls (i.e., benchmarks), and include ground truth and complementary reference data. A ground control report: The report must include, at a minimum, all pertinent base station information and mission notes, including information on GPS station monument names and stability.
Post-Survey Spatial Accuracy Report	Acceptance of the Post-Survey Spatial Accuracy Report and related information is required before point classification and other product derivation is to proceed. The absolute and relative accuracy of the data, both horizontal and vertical, and relative to known control, shall be verified prior to classification and subsequent product development. This validation is limited to the Fundamental Spatial Accuracy (defined below), measured in clear, open areas. A detailed report of this validationis a required deliverable. The report will include the following: • Flight trajectories as specified below. • Details of system calibration checks. • Results of relative (flight run) matching and details of any adjustments made. • Source of primary ellipsoidal height control. • Details of ellipsoid to orthometric corrections applied including any final adjustment to local SoI datum supplemental to the standard Geoid correction. • Results of vertical and horizontal accuracy validation. • All survey control coordinates, site id and check point comparisons in both Excel spreadsheet and ESRI shape file formats. • Digital photographs of all survey and check sites,

	with the site Id included in the filename. The bearing of the photo direction should also be included.
Report summary	1. A detailed narrative of the adjustment process and quality checks for accuracy. 2. A description of the software and equipment used to perform the adjustments. 3. A listing of the final adjusted coordinates in a spreadsheet or formatagreed upon during contract negotiations.
Flight Trajectories	1. All flight trajectories used for the capture of the delivered LIDAR data will be supplied in ESRI Shape files. The shape file table‘s must include the date of capture, local start time, local end time and which reference station was used for each trajectory.
Project completion report	1. Ellipsoid model used as part of the collection, geoid model used to compute orthometric heights 2. Data processing procedures for selection of postings, and all orthometric values of x, y, and z coordinates for LIDAR returns. Elevations shall be orthometric heights; and. 3. Report detailing the procedures, datum and projection, units, QC/QA report detailing spatial accuracy and general Conformation to prescribed requirements, and description of digital products for delivery, and compliance statement on conforming to contract specifications

4.4.12. Quality Assurance Report Specifications for Photograph

Description	Specifications
Horizontal accuracy andGSD	(a) Horizontal accuracy shall be 1:1000 or better (b) GSD 5 cm

Flight	(a) Crab (roll, pitch, roll)≤ 5^0 between any two successive exposure (b) Tilt $<3^0$ for any single exposure $<4^0$ relative and $<1^0$ overall average.
Procedure	1. Visual inspection of geometry to be performed to remove seams and edge mis-matches. 2. Visual inspection of the mosaic to correct blurred imagery, improper colour balancing, colour bleedingand shadow details. 3. Random geometric checks to be done for position accuracy between tiles. 4. Visual inspection for judging the minimum overlap of 60% and 30% in forward and side direction is metand features are not obscured due to high relief.

4.4.13. Provision of Ground Control Point

GCP (Ground control Points) are the locations where the DGPS survey will be done in order to Geo reference the satellite imagery to SOI benchmarks etc. These GCP locations are identified with the help of Google earth & satellite imagery.

The GCP locations are selected based on following criteria:

1. GCP to be selected as per the AOI and shall be uniformly distributed across the area of the image.
2. Selected location should be easy to identify like the corner of a culvert, bridge, corner of road or field etc.
3. Common or repetitive features like parking lots or lines on a highway should be avoided.
4. Collect GCPs in the area of overlap between two or more images wherever possible. GCPs collected in multiple images helps to increase the accuracy

Establishment of Ground control Points using DGPS

Following projection and datum parameter will be used:

a) **Datum -** The World Geodetic Datum 84 (WGS-84).

b) **Map Projection-** The coordinate system for all deliverables is Universal Transverse Mercator (UTM)

c) **Procedure to Carry out DGPS Survey:**The GCP locations which are first identified on raw satellite images are measured at site with the help of DGPS/ Total Station/ Leveling/ RTX as explained below.

DGPS: The differential Global Positioning System is used to measure latitude, longitude & ellipsoid height with reference to some known point (X,Y&Z) established by Survey of India (SOI). The measurement can be done in static mode or real time kinematic (RTK) mode. The ellipsoid height has to be converted to orthometric height (MSL) with the help of the latest earth gravitational model (EGM-08).

Leveling: The Z coordinate of a GCP can be established by doing leveling survey from a known GTS benchmark of SOI to the identified GCP.

The data should be processed in appropriate post processing software and WGS 1984 datum should be obtained. Grid co-ordinates should be worked out by applying appropriate projection. Prepare a location diagram of each GCP at site and two digital photographs of each ground control point from different direction should be captured at site to verify the same with monographs already available.

i) For the DGPS Survey, the firm should select the Ground Control Points (GCPs) at well-defined sharp points both on the ground and on imagery. The Ground Control Points (GCPs) should be located at nearly desired locations and should be clearly visible on the imagery. Sketches, both latitudinal and longitudinal coordinate and Easting/Northing of GCPs including GPS observation and adjustment data shall be submitted to the Authority.

ii) The firm shall make sure that while taking DGPS survey, all positions fixed must use at least four satellites. DGPS shall have the capacity to establish connections with minimum 8 to 10 satellites.

iii) The horizontal accuracy of the GCPs should be 0.01 – 0.5 meters.

iv) Minimum recording duration at each survey point in static mode shall be minimum 2.5 hour minutes.

v) The firm shall make sure that adjacent GCPs are established within every 1 sq km at least 4 points and the points shall be evenly distributed over the Notified Area.

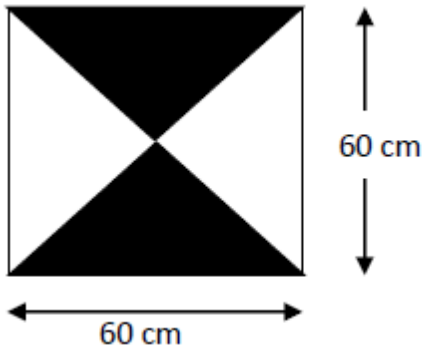
vi) The DGPS points should be connected to the GTS benchmark

vii) Some additional check points should be established using DGPS to check the accuracy of DTM generated. (These points will not be used at the time processing).

Ground Control Survey

The Service Provider must use ground control network already established SOI or CORS Network to establish the ground control for I base stations for drone flying activities.. The details of existing control network will be provided prior to commencement of work. GNSS used for this exercise should be dual frequency (L1 and L2) and multi-channel capability with on-the-fly ambiguity resolution and be able to log GPS data at 1-second epochs or better. Sufficient no. of check points must also be made with reference to existing ground control network or CORS network to check the accuracy of ORI. Check points and Control points are required to be pre-pointed. of Check points and Control points should be carried out with

following pattern and dimensions. Control points should be fixed with MS plate (200* 150mm) .



Pre-pointing Marker should be placed on firm and flat ground and should have adequate mechanism to hold it firmly to its positions during entire data acquisition period.Pre-pointing markers should be able to retain its shape and pattern even during heavy rain.

Provision of Ground Control Points

(a) Density & distribution of Ground Stations to be established for correction to onboard GNSS
(b) Equipment to be used for Observations
(c) Hardware & Software to be used for computation
(d) Description of observation methods
(e) Description of computation method
(f) Density and distribution of check-points for Internal QA/QC, in order to meet the Fundamental.

4.4.14. Delivery of Digital Data

In addition to the pre and post-project deliverables described above, the firm must submitthe following:

(a) One set of unclassified LAS files for specifications.
(b) One set of classified LAS files in accordance with the tiling schema.
(c) DEM's (hydro flattened bare earth) of 0.5 m accuracy (on ellipsoidal heights) at regular spacing of 0.5metredelivered in ESRI floating point GRID format and Interleaved by Line (BIL) format in Geo TIFF file format. The DEM's must also be delivered in the project tilingand required naming schema.
(d) DEM (on MSL heights).
(e) One set of 0.5 meter intensity imagery in Geo TIFF file format.
(f) 5 cm GSD Ortho Photo

(g) One set of Metadata for each data deliverable.

(h) DSM as per detailed specifications mentioned.

The firm must deliver raw datasets and LIDAR system data, including orthometric heights for each point above MSL datum, in comma-delimited ASCII files in x, y, and z format. The firm also must flag raw datasets from side lap and overlap areas of separate flight lines. The firm must submit raw datasets in project tiling or data models matching those of the DEM and DSM. The firm must also deliver raw data capturedby various sensors and instruments.

(a) All Ground control points (GCPs) provided/used for Data Acquisition & Processing. (m)Contours at 1 meter vertical interval. All deliverables must conform to the projection, datum, and coordinate system specifiedin the contract. File sizes cannot exceed 1 gigabyte, unless otherwise specified by the client.Each file must be organized to facilitate data manipulation and processing.

4.4.15. Reports

- **Collection Report :**
  A collection report detailing mission planning and flight logs will be submitted.
- **Survey Report:**
  A survey report detailing the collection of all ground control including the following will besubmitted:
  - Control points used to calibrate and process the LiDAR and derivative data
  - Check points used to validate the LiDAR point data or any derivative product
- **Processing Report:**
  A processing report detailing calibration, classification and product generation procedures including methodology used for breakline collection and hydro-flattening will be submitted.
- QA/QC Report:
  QA/QC report, detailing procedures for analysis, accuracy assessment and validation of thefollowing will be submitted.
  - Point data (Absolute vertical accuracy/relative vertical accuracy)
  - Bare earth surface (absolute vertical accuracy)
- **LIDAR Project Report:**
  A LiDAR project report must be delivered at the end of the processing along with the final delivered products. The project report serves as the master report for the entire project and includes detailed explanation on the processing and qualitative assessment performed on thedata. The quantitative analysis and the accuracy results must be clearly demonstrated and information on all survey points used for the accuracy analysis must be included. Breakline production procedures should be well defined including the production methodology, qualitative assessment and topology rules used for the project. A data dictionary defining thehorizontal and vertical datum, coordinate system and projection used for this project and all breakline feature definitions for streams and rivers, and inland lakes and ponds should be clearly defined. The DEM production methodology and QA/QC assessment on the DEMs must be clearly explained.

4.4.16. Responsibilities

Firms/Institutions responsibilities

- The firms/Institutions will have the responsibility for obtaining clearance from GoI agencies for flying over the survey area, acquiring and processing LIDAR and data including QA/QC, and delivery of raw and processed products to ULMMC.
- The firm will coordinate with ULMMC before data acquisition, processing.
- The firm will have the responsibility to ensure compliance of DGCA issued guidelines.
- The firm will provide training to ULMMC staff for processing the data.
- The firm will provide software/Hardware interface for 6 months.

Employer Responsibilities

- Provide necessary documentation for obtaining clearance from GOI agencies if needed.
- Facilitation of interactions with GOI agencies and with state agencies if needed.
- Release of funds and review of reports according to the agreed schedule.
- Constitution of a Technical Committee to support for interaction with the firm on technical issues through the contract period, and in reviewing reports and recommending follow-on actions, QA/QC and for evaluating digital products prior to acceptance.
- Nominated ULMMC official shall be at the place where LiDAR data is being captured with Operator/pilot during the flying for security reasons.
- The ULMMC shall nominate suitable officer to coordinate the activities, and provide necessary interaction at appropriate times to avoid any disturbance and loss of time for carrying out the assignment.
- Notification for entry to the land for surveying & authorization letter to civil authorities shall be given to the firm.
- Any other facilities mutually agreed upon by employer and the firms/Institutions.

4.4.17. The scope of the work in this stage can be broadly categorized as:

- Selection of GCP's Locations & Preparation of Monographs for GCP establishment on ground.
- Establishment of Ground control Points using DGPS.
- LIDAR Data acquisition
- Contour generation
- Digital Terrain Model Generation. (DSM & DTM)
- Ortho Photo Generation.
- Final reports

4.5. Schedule of Selection Process

The ULMMC would endeavor to adhere to the schedule as mentioned in the Data Sheet.

4.6. Communications

The Proposal and clarifications required if any from ULMMC should be addressed to the "Director, ULMMC, 4th Floor, DDPM Tower, Haridwar By-pass road, Ajabpur khurd". The relevant information and documents related to the Project like EOI, notices regarding selection process, etc. shall be uploaded on the website.

5. GENERAL CONDITIONS AND CONDITION FOR EVALUATION

Firms/Institutions failing to meet these criteria or not submitting requisite supporting proof as specified in this EOI document may be liable to be rejected during the Proposal Evaluation at sole discretion of the ULMMC.

5.1. Applicant/Firm

The applicant/firm can be a single entity. Joint venture for this work will not be applicable.

5.2. Cost of Proposal

The Applicant/firm shall be responsible for all of the costs associated with the preparation of their Proposals and their participation in the selection process. The ULMMC will not be responsible or in any way liable for such costs, regardless of the conduct or outcome of the selection process.

5.3. Tender Fee/ EOI Document Fee

Interested agencies are advised to study this EOI document carefully before submitting their proposals in response to the EOI Notice. Submission of a proposal in response to this notice shall be deemed to have been done after careful study and examination of this document with full understanding of its terms, conditions and implications. EOI Tender fee of Rs.5000.00 in original shall be submitted in the Office of Uttarakhand Landslide Mitigation and Management Center (ULMMC) office on all working days between 28th July,2023 (12:00 Hrs.) to 30th August,2023 (17:00 Hrs.) either by registered post/Speed post or by hand. Only those bids will be entertained whose EOI Tender fee is received before 30th August,2023 (17:00 Hrs.) ULMMC will not be held responsible for the postal delay, if any, in the delivery of the document or non-receipt of the same. The Bidder shall furnish EOI tender fee for the amount as mentioned above in form of Demand Draft on a Nationalized/Scheduled Bank in favor of **"Additional Director General, ULMMC, Dehradun, Uttarakhand" payable at Dehradun.**

Acknowledgement by Applicants

It shall be deemed that by submitting the Proposal, the Applicants has:

a) Made a complete and careful examination of the EOI document;

b) Received all relevant information requested from the ULMMC;

c) Acknowledged and accepted the risk of inadequacy, error or mistake in the information provided in the EOI document or furnished by or on behalf of the ULMMC or relating to any of the matters referred above;

d) Satisfied itself about all matters, things and information, including matters referred herein above, necessary and required for submitting an informed Application and performance of all of its obligations there under;
e) Acknowledged that it does not have a Conflict of Interest; and
f) Agreed to be bound by the undertaking provided by it under and in terms hereof.

The ULMMC shall not be liable for any omission, mistake or error on the part of the Applicants in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to the EOI document or the Selection Process, including any error or mistake therein or in any information or data given by the ULMMC.

5.4. Right to reject any or all Proposals

Notwithstanding anything contained in this EOI document, the ULMMC reserves the right to accept or reject any Proposal and to annul the Selection Process and reject all Proposals, at any time without any liability or any obligation for such acceptance, rejection or annulment, and without assigning any reasons thereof.

a. The ULMMC reserves the right to reject any Proposal if:
   i. At any time, a material misrepresentation made by the Applicants is uncovered or comes to the knowledge of the ULMMC.

   Or

   ii. The Applicants does not provide, the supplemental information sought by the ULMMC, within the specified time for evaluation of the Proposal.
b. Such misrepresentation/ improper response may lead to the disqualification of Applicants. If such disqualification/ rejection occurs after the Proposals have been opened then the ULMMC reserves the right to take any other measure as may be deemed fit, including annulment of the Selection Process.

5.5. Amendment of EOI document

a. At any time prior to the deadline for submission of Proposal, the ULMMC may, for any reason, at its own initiative, modify the EOI document by the issuance of Addendum/ Amendment.
b. All such addenda/amendments will be posted on the website along with the amendments and will be binding on all Applicants they will form part of the EOI.
c. In order to afford the Applicants a reasonable time for taking an amendment into account, or for any other reason, the ULMMC may, in its sole discretion, extend the Proposal Due Date (PDD). Any extension of PDD shall be published only on the websites “www.uktenders.gov.in”, no separate correspondence will be made by this office.

5.6. Conflict of Interest

a. The Authority requires that the firm provides professional, objective, and impartial advice and at all times hold the Authority's interest’s paramount, avoid conflicts with other assignments or its own interests, and act without any consideration for future work. The firm shall not accept or engage in any assignment that would be in conflict with its prior or current obligations to other clients, or that may place it in a position of not being able to carry out the assignment in the best interests of the Authority.
b. An Applicant shall not have a conflict of interest that may affect the Selection

Process of firm (the "Conflict of Interest"). Any Applicant found to have a Conflict of Interest shall be disqualified.

5.7. Language

The Proposal and all related correspondence and documents shall be written in English language. If any supporting document attached to the Proposal is in any other language, the same will be supported by an English translation (duly authenticated/ attested by the Authorized Signatory of the Applicant.

5.8. Format and Signing of Proposal

a. The interested Applicants shall provide all the information sought under this EOI document. The ULMMC would evaluate only those Proposals that are received in the specified forms and are complete in all respects. All pages of the proposal should be serially numbered and cross referencing wherever necessary should have been done in Annexure also. The Proposal should also contain the Table of Contents.

b. The interested Applicants shall prepare the Proposal together with Documents required to be submitted along therewith pursuant to this EOI. The Proposal shall be typed or written in indelible ink and signed by the authorized signatory of the Applicants who shall initial each page, in blue ink. In case of printed and published Documents, only the cover shall be signed. All the alterations, omissions, additions, or any other amendments made to the Proposal shall be initialed by the person(s) signing the Proposal. The Proposals must be properly signed by a duly authorized person holding the Power of Attorney with Board Resolution as per statutory provisions. A copy of the Power of Attorney certified under the hands of a notary public on the specified form, shall accompany the Proposal.

c. Applicants should note the Proposal Due Date, as specified in Proposal Data Sheet, for submission of Proposals. Applicants are reminded that no supplementary material will be entertained by the ULMMC, and that evaluation will be carried out only on the basis of Documents received by the closing time of Proposal Due Date as specified in Proposal Data Sheet unless it is invited by the ULMMC.

5.9. Proposal

a. Applicants shall submit the Proposal in the formats provided in the Appendix (the “Formats”)

b. The ULMMC reserves the right to verify all statements, information and documents, submitted by the Applicants in response to the EOI document. Failure of the ULMMC to undertake such verification shall not relieve the Applicants of its obligations or liabilities hereunder nor will it affect any rights of the ULMMC thereunder.

c. In case it is found during the evaluation or after empanelment that an Applicant has made a material misrepresentation or has given any materially incorrect or false information, the Applicants shall be disqualified forthwith, be liable for its removal from the Panel of Technical Agency, by a communication in writing by the ULMMC without being liable in any manner, whatsoever, to the Applicants/ Empaneled Technical Agency(s), as the case may be.

5.10. Submission of Proposal

Bid must be submitted online at e-procurement portal of Uttarakhand(www.ukktenders.gov.in). The Applicants shall submit the proposal (Proof of Eligibility and Technical Proposal) comprising the documents to meet the requirements of 'Proof of Eligibility' and 'Technical Proposal' along with bid document.

5.11. Preparation of Proposal

The proposals would be evaluated by ULMMC. A single-stage procedure will be adopted in evaluating the proposal which will be divided in two parts namely "First (Part I)" and "Second (Part II)".

The proposal must be prepared as follows,

Part 1: Essential Qualifications (Proof of eligibility) – Pre Qualification Criteria

Part 2: Criteria for Evaluation (Technical Proposal)

Evaluation Part 1 – Proof of Eligibility

In the first part - Proof of Eligibility, it will be examined as per following tools of evaluation:

1. Annexure 1 – Covering Letter
2. Annexure 2 – Format for Minimum Technical Proposal
3. Annexure 3 – Format for CA Certificate for Minimum Financial Eligibility Criteria
4. Annexure 4 - Details of Applicant

An Applicant satisfying the minimum Eligibility Criteria shall be considered "responsive" in Proof of Eligibility and the Technical Proposals of only those Applicants shall be evaluated further whose applications are responsive in evaluation process Part 1.

Part 2: Technical Evaluation –

In the second part the Technical proposal shall include Appendix listed below with proper reference indexing:

1. Annexure 5 – Experience in Similar Projects with approval from competent authority as per clause 8.3.
2. Annexure 6 – Financial turnover with CA certificate as per clause 8.4.
3. Annexure 7–Description of Approach, Methodology and Work Plan on the basis of Site Appreciation as per clause 8.5.
4. Annexure 8 – Minimum Equipment required as per clause 8.6

5.12. Proposal Due Date

a. Proposal should be submitted on or before the Proposal Due Date specified in the Data Sheet at the address provided in Data Sheet in the manner and form as detailed in this EOI document.

b. The ULMMC may, in its sole discretion, extend the Proposal Due Date by issuing an Addendum in accordance with provisions of this EOI through (www.uktenders.gov.in) website only.

5.13. Late Proposals

a. Any Proposal received after the Proposal Due Date will not be accepted. ULMMC is not responsible for any Postal delays. Applicant shall ensure the receipt of their Bid. Any queries in this regard please contact over mail ulmmc.ddn@gmail.com or on mobile number 07897788842.

6. EVALUATION PROCESS

6.1. Evaluation of Proposals

a. The ULMMC would subsequently examine and evaluate Proposals in accordance with the Selection Process specified in this EOI and the criteria set out in this EOI.

b. Proposals, for which a notice of withdrawal has been submitted in accordance with the provisions of the EOI document, will not be opened.

c. Prior to evaluation of Proposals, the CORPORATION will determine whether each Proposal is responsive to the requirements of the EOI. A Proposal shall be considered responsive only if:

   i. It is received as per the detailed set out.
   ii. It is received by the Proposal Due Date including any extension.
   iii. It is signed, sealed, bound and marked.
   iv. It contains all the information (complete in all respects) as requested in the EOI document;
   v. It does not contain any condition or qualification;
   vi. It is not non-responsive in terms hereof;
   vii. Meets the Empanelment criteria

d. The ULMMC reserves the right to reject any Proposal which is non responsive and no request for alteration, modification, substitution or withdrawal shall be entertained by the ULMMC in respect of such Proposals.

e. After the evaluation, the ULMMC would prepare a list of Empanelment Applicants and shall be empaneled by the Uttarakhand Landslide Mitigation and management center(ULMMC), Dehradun as firms/Institutions for conducting LiDAR survey in Uttarakhand state.

f. Any information contained in the Proposal shall not in any way be construed as binding on the ULMMC, its agents, successors or assigns, but shall be binding against the firms/Institutions/Agencies if the empanelment is subsequently awarded to it.

6.2. Confidentiality

Information relating to the examination, clarification, evaluation and recommendation for the Empanelment Bidders shall not be disclosed to any person not officially concerned with the process. ULMMC will treat all information submitted as part of all Proposals in confidence and will insist that all who have access to such material treat it in confidence. ULMMC will not divulge any such information unless it is ordered to do so by any Government authority that has the power under law to require its disclosure or due to statutory compliances.

6.3. Clarification

a. To facilitate evaluation of Proposals, the ULMMC may, at its sole discretion, seek clarifications from any Applicant(s) regarding its Proposal. Such clarification(s) shall be provided within the time specified by the ULMMC for this purpose. Any request for clarification(s) and all clarification(s) in response there to shall be in writing. Clarification /request submitted by the Applicants without the request of the ULMMC shall not be entertained.

b. If an Applicant does not provide clarifications within the specified time, its Proposal shall be liable to be rejected. In case the Proposal is not rejected, the ULMMC may proceed to evaluate the Proposal by construing the particulars requiring clarification to the best of its understanding, and the Applicant shall be barred from subsequently questioning such interpretation of the ULMMC.

6.4. Empanelment Letter

a. After selection, an Empanelment Letter shall be issued, in duplicate, by the Uttarakhand Landslide Mitigation and Management center(ULMMC), Dehradun to the Selected Applicants. Selected Applicants shall within 7 (seven) days, sign and return the copy of the Letter in acknowledgement thereof. In the event the copy of the Award Letter duly signed by the any of the Applicant(s) is not received by ULMMC within stipulated date, it will be considered cancelled unless the selected applicant consents extension of time for submission.

7. MINIMUM ELIGIBILITY CRITERIA

7.1. Technical capabilities:

7.1.1. Firm must have done at least 05 (Five) similar work for LiDAR survey of an area in last 5(five) years (2018-19, 2019-20, 2020-21, 2021-22, 2022-23) and the same LiDAR survey work must be completed and approved by competent authority in all respects.

Similar Nature: - LiDAR survey.

7.1.2. Firm must be registered and operational in India since last 5 years from the date of publish of this EOI and must remain operational thereafter.

7.1.3. Shall have adequate expertise, manpower to execute the project within the desired timeline.

7.1.4. Shall not be blacklisted/debarred by any State/Central Department or PSU or Autonomous bodies. The applicant must submit a duly notarized affidavit to this effect. Applications received without this declaration shall stand automatically rejected.

7.2. Financial capabilities:

7.2.1. Firm should have minimum average annual turnover of Rs.5 Lakh in any one in the last three financial years from the date of publication of the EOI (Last 3 (three) financial years read as 2019-20, 2020-21, 2021-22).

7.2.2. Firm should have a positive net worth in last three years from the date of publication of the EOI.

7.2.3. Shall submit a copy of PAN Card and GST Registration details.

7.2.4. Shall submit balance sheet, profit & loss account statement for the last three financial years certified by Charter Accountant.

NOTE: *Firms/Institutions which do not qualify the minimum eligibility criteria will be considered non-responsive and further evaluation of their offer will not be done*

8. EVALUATION OF THE OFFER

8.1. The offers submitted will be evaluated using the following criteria:

S. No.	Evaluation Criteria	Maximum Marks	Qualifying Marks
1	Firm must have done at least 05 (five) similar work of project cost 1 Crore or more for LiDAR survey of an area in last 5(five) years (2018-19, 2019-20, 2020-21, 2021-22, 2022-23) and the same LiDAR survey work must be completed and approved by competent authority in all respects.	25	70
2	Firm should have average annual turnover in the last three financial years from the date of publication of the EOI (Last 3 (three) financial years read as 2019-20, 2020-21, 2021-22)	25	
3.	Submission of Approach, Methodology and Work plan	25	
4.	Equipment's required (owned/leased)	25	
	Total Points -	100	70

8.2. The number of points to be given under each evaluation sub-criteria for firm's similar work experience in the field of assignment and proposed approach, work plan and methodology are:

8.3. Experience Criteria

S. No.	Evaluation Parameter	Marks
1	Firm must have done at least 05 (Five) similar work of project cost 1 Crore or more for LiDAR survey of an area in last 5(five) years (2018-19, 2019-20, 2020-21, 2021-22, 2022-23) and the same LiDAR survey work must be completed and approved by competent authority in all respects.	25 marks
1.1.	Up to 5 relevant projects of similar work of project cost 1 Crore or more for LiDAR survey of an area of similar nature in last 5(five) years (2018-19, 2019-20, 2020-21, 2021-22, 2022-23).	05 Marks for each project with maximum up to 25 Marks
	Total Marks	**25 Marks**

8.4. Financial Capabilities: -

S. No.	Criteria	Maximum Marks
1	Firm should have average annual turnover in the last three financial years from the date of publication of the EOI (Last 3 (three) financial years read as 2019-20, 2020-21, 2021-22) will be given marks mentioned below. **INR 05 Lakhs-10 Lakhs Marks-05** **INR 10 Lakhs – 20 Lakhs Marks-10** **INR 20 Lakhs – 30 Lakhs Marks-15** **INR 30 Lakhs – 40 Lakhs Marks-20** **INR 40 Lakhs – 50 Lakhs Marks-25**	25 marks
	Total Marks -	**25 marks**

8.5. Description of Approach, Methodology and Work Plan on the basis of Site Appreciation

S. No.	Criteria	Maximum Marks
1	**Technical Approach and Methodology**: In this chapter please explain your understanding of the objectives of the assignment, approach to the services, methodology for carrying out the activities and obtaining the expected output, and the degree of detail of such output. You should highlight the problems being addressed and their importance and explain the technical approach you would adopt to address them. You should also explain the methodologies you propose to adopt and highlight the compatibility of those methodologies with the proposed approach.	15 marks

2	**<u>Work Plan on the basis of site appreciation</u>:** In this chapter please propose the main activities of the assignment, their content and duration, phasing and interrelations, milestones (including interim approvals by the Client), and delivery dates of the reports. The proposed work plan should be consistent with the technical approach and methodology, showing understanding of the Work/ Project Site and also the TOR and ability to translate them into a feasible working plan.	10 marks

8.6. Equipment's required

S.No.	Items	Minimum quantity	Ownership/Lease	Documents to be submitted	Marks
1.	For Aerial LiDAR Survey				
a	Class 1 LiDAR scanner for drone operations having a serviceable altitude range of minimum 75m/AGL with point rate of 240,000pts/sec translating more than 25points/m²	1	Own /Lease	I. Invoice copy ii. Lease agreement showing affirmed availability of the equipment for the successful and complete implementation of the Project along with invoice copy of the owner. iii. Copy of Import Documentation or similar ownership documents AND iv) Data Sheet of equipment mentioning these technical specifications along with equipment manufacturer webpage printout	05
b	Drones & Unmanned Aerial Vehicles	1	Own /Lease	Adequate evidence of the firms/Institutions capacity to lease Drones & Unmanned aerial vehicles (fully capable of Aerial LIDAR survey scoped in this Project), on ready accessibility & uninterrupted availability basis, for regular use over prolonged period [sufficient for this Project]; like some existing or freshly made Agreements with Owners of Drones & Unmanned Aerial Vehicles	05

c	DGPS (dual frequency, at least 200 channels)	8	Own	Invoice Copy	05
d	Aerial Medium Format Camera (above 50 megapixel)	1	Own	i) Invoice Copy, ii) Copy of Import Documentation or similar ownership documents Or lease copy iii) Data Sheet of equipment	05
e.	LiDAR Trajectory Pre-processing software	1	Own	i) Invoice Copy,	05

8.7 Mapower: Kindly share an organogram of the organization for better understanding of the employer.

NOTE: *Evaluation will not be done on the basis of manpower.*

9. Payment Terms

The fee structure will be on the basis of relevant work mentioned below.

Sr. No.	Activities	Payment Schedule Breakup (in % of the Project Cost)
1	Provision of ground control points including check points, flying and data acquisition and approved by ULMMC	20%
2	Post generation for ORI Ortho rectified image , Post Processing Contours and approved by ULMMC	30%
3	Post Processing for generation of DEM (0.5 m) and Classified LIDAR Point cloud, Post generation for DSM,DTM and approved by ULMMC	30%
4	Delivery of ORI & DSM,DTM and other final Deliverables, final approval and satisfaction report from the client	20%
	Total	**100%**

10. DATA SHEET

S.No.	Key Information	Details
1.	Assignment	Empanelment of Firms/Institutions for conducting LiDAR survey in Uttarakhand
2.	Proposal Validity	180 days from the Proposal Due Date (PDD) or any extension thereof, sought by Andhra Pradesh MSME Development Corporation
3.	Proposal Evaluation	**Envelope 1 – Pre- Qualification Criteria** 1. Annexure 1 – Covering Letter of Firm. 2. Annexure 2 – Minimum technical eligibility as per clause 7.1 3. Annexure 3 – Minimum financial eligibility as per clause 7.2 4. Annexure 4 – Details of Applicant/firm. **Envelope 2 – Technical Proposals** Technical proposals of the firms/Institutions that meet the Eligibility Criteria (Experience and Financial) will only be evaluated further. Minimum score required for technical qualification of the proposal is 70 marks (max. marks = 100) 1. Annexure 5 – Experience in Similar Projects with approval from competent authority as per clause 8.3. 2. Annexure 6 – Financial turnover with CA certificate as per clause 8.4. 3. Annexure 7–Description of Approach, Methodology and Work Plan on the basis of Site Appreciation as per clause 8.5. 4. Annexure 8 – Minimum Equipment's required clause 8.6
4.	Criteria for selection of firm	The sole criterion for selection of firm is on the technical qualification.
5.	Submission of Proposal	The applicants shall be required to submit their proposals as per annexures provided in the EOI duly filled, signed and stamped on e-procurement website of Uttarakhand government site. (www.uktenders.gov.in)

11. INTRODUCTIONS TO BIDDERS

a. The entire proposal shall be strictly as per the format specified in this EOI. Bids with deviation from this format shall be summarily rejected and the decision of the tendering authority in this regard will be final and binding on all.

b. The bidders are required to submit the Technical bid, as per the instruction given in this EOI.

c. Any deficiency or deviation in the documentation may result in the rejection of the bid.
d. The Applicant shall be responsible for all of the costs associated with the preparation of their Proposals and their participation in the selection process. The ULMMC will not be responsible or in any way liable for such costs, regardless of the conduct or outcome of the selection process.

12. BID RESPONSE

a. Bidders are advised to study all instructions, forms, terms, requirements and other information in the EOI documents carefully. Submission of bid shall be deemed to be done after careful study and examination of the EOI document with full understanding of its implications.
b. The response to this EOI should be full and complete in all respects. Failure to furnish all information required by the EOI documents or submission of a proposal not substantially responsive to the EOI documents in every respect will be at the bidder's risk and may result in rejection of its proposal.

ANNEXURES

ANNEXURE – 1

COVERING LETTER

Date:

To,

Director,
Uttarakhand Landslide Mitigation & Management center,
4th Floor DDPM tower, Haridwar by-pass road, Ajabpur khurd
Dehradun-248001.

Subject: Empanelment of Firms/Institutions for conducting LiDAR survey in Uttarakhand state.

Dear Sir/Madam,

With reference to the EOI Document for the captioned Project, I/we, having examined all relevant documents and understood their contents, hereby submit our Proposal for selection as firm for conducting LiDAR survey work in Uttarakhand state. The Proposal is unconditional and unqualified.

1. I/we confirm that I/we have examined the terms and conditions published in the EOI and accordingly submitting the Application. The proposal is unconditional and unqualified.
2. All information provided in the Proposal is true and correct and all documents accompanying such Proposal are true copies of their respective originals.
3. This statement is made for the express purpose of appointment as the firm on the empanelment of Uttarakhand Landslide Mitigation & Management center, Dehradun-248001.
4. I/We shall make available to ULMMC any additional information it may deem necessary or require for supplementing or authenticating the Proposal.
5. I/We acknowledge the right of the ULMMC to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
6. I/We certify that in the last three years, I/we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial Court or a judicial pronouncement or arbitration award against us, nor have been expelled from any project or contract nor have had any contract terminated for breach on our part.
7. I/We declare that:
    a) I/We have examined and have no reservations to the EOI Documents, including any Addendum thereto, issued by the ULMMC;
    b) I/We do not have any conflict of interest in accordance with provisions of the EOI Document;
    c) I/We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the EOI document, in respect of any tender or request for proposal issued by or any agreement entered into with the Authority or any other public sector enterprise or any government, Central or State; and

d) I/We hereby certify that we have taken steps to ensure that in conformity with the provisions of this EOI, no person acting for us or on our behalf will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

8. I / We understand that you may cancel the Selection Process at any time and that ULMMC is neither bound to accept any Proposal that you may receive nor to select the Consultant, without incurring any liability to the Applicants in accordance with the EOI document.
9. I / We certify that in regard to matters other than security and integrity of the country, we or any of our Associates have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which would cast a doubt on our ability to undertake the work for the Project or which relates to a grave offence that outrages the moral sense of the community.
10. I / We further certify that in regard to matters relating to security and integrity of the country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.
11. I / We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the Authority (and/ or the Government of India) in connection with the selection of work or in connection with the Selection Process itself in respect of the above mentioned Project.
12. I / We agree and understand that the proposal is subject to the provisions of the EOI document. In no case, shall I/we have any claim or right of whatsoever nature if the work for the Project is not awarded to me/us or our proposal is not opened or rejected.
13. I / We agree to keep this offer valid for 180 (One Hundred and Eighty) days from the Publication Date specified in the EOI.
14. In the event of my/our firm being selected for work, I/we agree and undertake to provide the services of the work in accordance with the provisions of the EOI and that the Team Leader shall be responsible for providing the agreed services himself and not through any other person or Associate.
15. I/We have studied EOI and all other documents carefully. We understand that we shall have no claim, right or title arising out of any documents or information provided to us by the Authority or in respect of any matter arising out of or concerning or relating to the Selection Process including the award of Empanelment.
16. The Pre-Qualification and Technical Proposals are being submitted in separate Envelopes. The contents provided in Envelopes 1 & 2 shall constitute the Application which shall be binding on us.
17. I/We agree and undertake to abide by all the terms and conditions of the EOI Document. In witness thereof, I/we submit this Proposal under and in accordance with the terms of the EOI Document.

Yours faithfully,

(Signature, name and designation of the authorized signatory)

ANNEXURE – 2

Minimum Technical Capabilities

The firm's experience of the last 5 years in the field of assignment (Please also enclosed the supporting documents)

S. No.	Name of the Project	Nature of the project	Name of the Department	Total Cost of the Project	Date of commencement of the Project	Status of the Project	Remarks about the completion of the project by the concerned Department
1	2	3	4	5	6	7	8

(SIGNATURE OF AUTHORIZED SIGNATORY AND SEAL)

ANNEXURE – 3

Minimum Financial Capabilities

FORMAT FOR CA CERTIFICATE

We hereby certify that average revenue from advisory services to state/ central government / Multilateral Organizations in the last three financial years (2020-21, 2021-22, and 2022-23) is as is specified below.

S.No.	Financial year	Turnover (in Lakhs)
1.		
2.		
3.		
	TOTAL	

Yours faithfully,
For ……
Chartered Accountants

Membership Number
Date-
Place-

ANNEXURE – 4

DETAILS OF APPLICANT FIRM

1.	Name of bidder	
2 (a)	Address of bidder	
(b)	Phone no:	
(c)	Fax no.	
(d)	E mail	
(e)	Website	
3	Legal status of bidder (Attach copies of original document defining the legal status). The applicant is: a) An individual b) A proprietary Firm	
4	Name of authorized signatory to bid	
(a)	Designation	
(b)	Phone (Landline) Phone (Mobile)	
(c)	Fax	
(d)	Email	
5	NAME, address, Tel No. Fax, email at which communication to be sent in respect of bid	
6	Names of the present Proprietors/ Partners/Board of Directors	

(SIGNATURE OF AUTHRIZED SIGNATORY AND SEAL)

ANNEXURE – 5

EXPERIENCE IN SIMILAR PROJECTS (Clause 8.3)

S.No.	Name of Project	Project Details (such as Client, Location, Area etc.,)	Extent of the Project Site	Services Undertaken	Relevant Document Enclosed as Proof of Experience*

* The claimed experience shall be supported by documentary evidence i.e. work order/Agreement/ completion certificates, etc.

(Signature, name and designation of the authorized signatory)

(Name and seal of the Applicant)

ANNEXURE – 6

FORMAT FOR CA CERTIFICATE (Clause 8.4)

We hereby certify that average revenue from advisory services to state/ central government / Multilateral Organizations in the last three financial years (2020-21, 2021-22, and 2022-23) is as is specified below.

S.No.	Financial year	Turnover (in Lakhs)
1.		
2.		
3.		
	TOTAL	

Yours faithfully,
For ……
Chartered Accountants

Membership Number
Date-
Place-

ANNEXURE – 7

Submission of Approach, Methodology and Work plan (Clause 8.5)

S.No.	Criteria	Methodology
1.	Technical Approach and Methodology	
2.	Work Plan on the basis of site appreciation	

(Signature, name and designation of the authorized signatory)

(Name and seal of the Applicant)

ANNEXURE – 8

Minimum Equipment's required (Clause 8.6)

Details of Resources Sheet - Equipment & Software's owned by the Agency and likely to be used in carrying out the Work

Sr. No.	Name of Equipment's/software's owned by firm/contractor or to be proposed in the project	Status –Available/ Not Available

(SIGNATURE OF AUTHORIZED SIGNATORY AND SEAL)

Uttarakhand Landslide Mitigation and Management Center (ULMMC)

Government of Uttarakhand

4 Subhash Road, Uttarakhand Secretariat, Dehradun - 248001, Uttarakhand

Govt. of Uttarak

Letter No. 148 / 12 **/ ULMMC / 2023** **Dated** 25 /08 **/2023**

Corrigendum – 1

NAME OF PROJECT: Uttarakhand Landslide Mitigation & Management Center
EOI No.: 02/EOI/ULMMC/2023
NIT No.: 134/12/ULMMC/2023

Bids were invited for empanelment of firms/Institutions "for conducting LiDAR survey in Uttarakhand state." through www.uktenders.gov.in dated 28/07/2023 of this office. Now, due to unavoidable reasons
the following amendments are being made in the following EOI:

S.No.	Project Title	As per EOI	As ammended
1.	2.	3.	4.
	Procurement of: Empanelment of Firms/Institutions for conducting LiDAR survey in Uttarakhand state.	1. Last Date/Time for submission of online bids: 30.08.2023 (17:00 Hrs.) 2. Last Date of submission of Tender fees (Hard Copy): 30.08.2023 (17:00 Hrs.) 3. Date of technical Bid Opening: 31.08.2023 (12:00 Hrs.)	1. Last Date/Time for submission of online bids:18th, September,2023 at 12:00 Hrs. 2. Last Date of submission of Tender fees (Hard Copy):18th, Septeber,2023 at 12:00 Hrs. 3. Date of technical Bid Opening:18th,September,2023 at 15:00 Hrs.

Note: - All other conditions in the bid documents shall remain same.

Director,
ULMMC,
Dehradun.

Uttarakhand Landslide Mitigation and Management Center (ULMMC)

Government of Uttarakhand

4 Subhash Road, Uttarakhand Secretariat, Dehradun - 248001, Uttarakhand

Govt. of Uttarakhand

Letter No. 162 / 12 **/ ULMMC / 2023** **Dated** 14 / 09 **/2023**

Corrigendum – 2

NAME OF PROJECT: Uttarakhand Landslide Mitigation & Management Center
EOI No.: 02/EOI/ULMMC/2023
NIT No.: 134/12/ULMMC/2023

Bids were invited for empanelment of firms/Institutions "for conducting LiDAR survey in Uttarakhand state." through www.uktenders.gov.in dated 28/07/2023 of this office. Now due to unavoidable reasons, the following amendments are being made in the following EOI:

S.No.	Project Title	As per EOI	As ammended
1.	2.	3.	4.
1.	**Procurement of:** Empanelment of Firms/Institutions for conducting LiDAR survey in Uttarakhand state.	1. Last Date/Time for submission of online bids:18th, September,2023 at 12:00 Hrs. 2. Last Date of submission of Tender fees (Hard Copy):18th, Septeber,2023 at 12:00 Hrs. 3. Date of technical Bid Opening:18th,September,2023 at 15:00 Hrs.	1. Last Date/Time for submission of online bids:06th,October,2023 at 12:00 Hrs. 2. Last Date of submission of Tender fees (Hard Copy):06th, October,2023 at 12:00 Hrs. 3. Date of technical Bid Opening:06th, October,2023 at 15:00 Hrs.

Note: - All other conditions in the bid documents shall remain same.

Director,
ULMMC,
Dehradun.

eProcurement System Government of Uttarakhand

Published Corrigendum Details

Date : 17-Jul-2025 12:14 PM

Print

Organisation Chain :	DG - Uttarakhand Landslide Mitigation and Management Center (ULMMC) Dehradun||Addl. Director General||Design Engineer||Assistant Engineer-1
Tender ID :	2023_ULMC1_61482_1
Tender Ref No :	134/12/ULMMC/2023
Tender Title :	Empanelment of Firms/Institutions for conducting LiDAR survey in Uttarakhand state.
Corrigendum Type :	Date

Corrigendum:2

Corrigendum Title	Corrigendum Description	Published Date	Document Name	Doc Size(in KB)
Date Extension	Date Extension	14-Sep-2023 01:14 PM	162_LiDar.pdf	1251.19

Critical Dates

Publish Date	28-Jul-2023 06:00 PM	**Bid Opening Date**	06-Oct-2023 03:00 PM
Document Download/Sale Start Date	28-Jul-2023 06:00 PM	**Document Download/Sale End Date**	06-Oct-2023 12:00 PM
Clarification Start Date	NA	**Clarification End Date**	NA
Bid Submission Start Date	28-Jul-2023 06:00 PM	**Bid Submission End Date**	06-Oct-2023 12:00 PM
Pre Bid Meeting Date	04-Aug-2023 03:30 PM		

Corrigendum:1

Corrigendum Title	Corrigendum Description	Published Date	Document Name	Doc Size(in KB)
Date Change	Date Change	25-Aug-2023 02:35 PM	Corrigendum1.pdf	575.41

Critical Dates

Publish Date	28-Jul-2023 06:00 PM	**Bid Opening Date**	18-Sep-2023 03:00 PM
Document Download/Sale Start Date	28-Jul-2023 06:00 PM	**Document Download/Sale End Date**	18-Sep-2023 12:00 PM
Clarification Start Date	NA	**Clarification End Date**	NA
Bid Submission Start Date	28-Jul-2023 06:00 PM	**Bid Submission End Date**	18-Sep-2023 12:00 PM
Pre Bid Meeting Date	04-Aug-2023 03:30 PM		

Details Before Corrigendum

Critical Dates

Publish Date	28-Jul-2023 06:00 PM	**Bid Opening Date**	31-Aug-2023 12:00 PM
Document Download/Sale Start Date	28-Jul-2023 06:00 PM	**Document Download/Sale End Date**	30-Aug-2023 05:00 PM
Clarification Start Date	NA	**Clarification End Date**	NA
Bid Submission Start Date	28-Jul-2023 06:00 PM	**Bid Submission End Date**	30-Aug-2023 05:00 PM
Pre Bid Meeting Date	04-Aug-2023 03:30 PM		

Uttarakhand Landslide Mitigation and Management Center (ULMMC)

Government of Uttarakhand

4 Subhash Road, Uttarakhand Secretariat, Dehradun - 248001, Uttarakhand

Govt. of Uttarakhand

Letter No. 168 / 12 **/ ULMMC / 2023** **Dated** 19 / 09 **/2023**

Corrigendum-3

NAME OF PROJECT: "Empanelment of Firms/Institutions for conducting LiDAR survey in Uttarakhand state".

EOI No.: 02/EOI/ULMMC/2023

NIT No.: 134/12/ULMMC/2023

S. No.	Clause No.	As Existing	As Amended
1	*2*	*3*	*4*
1.	**7. "MINIMUM ELIGILBILITY CRITERIA",** 7.1.. "Technical capabilities" Point no.7.1.1., Pg.No.29	Firm must have done at least 05 (Five) similar work for LiDAR survey of an area in last 5(five) years (2018-19, 2019-20, 2020-21, 2021-22, 2022-23) and the same LiDAR survey work must be completed and approved by competent authority in all respects. ***Similar Nature: - LiDAR survey.***	Firm have done at least **2(Two)** similar work (LiDAR survey) of an area in last 5(five) years (2017-18, 2018-19, 2019-20, 2020-21, 2021-22). the same must be completed and approved by competent authority in all respects. Copy of work order & completion certificates issued by the client to be furnished. To be submitted in annexure-2 **Note:** Firms having experience less than **"MINIMUM ELIGILBILITY CRITERIA"** will be considered non-responsive and no further evaluation will be done.

(A.E.) (CMCN) AM

S. No.	Clause No.	As Existing	As Amended
1	*2*	*3*	*4*
2.	**7. "MINIMUM ELIGILBILITY CRITERIA",** 7.2. "Financial capabilities" Point no.7.2.1., Pg.No.30	Firm should have minimum average annual turnover of Rs.5 Lakh in any one in the last three financial years from the date of publication of the EOI (Last 3 (three) financial years read as 2019-20, 2020-21, 2021-22).	**DELTED**

<table>
<tr><th>S. No.</th><th>Clause No.</th><th>As Existing</th><th>As Amended</th></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>2</td><td>8.“EVALUATION OF THE OFFER”

8.1. “The offers submitted will be evaluated using the following criteria”,
Pg.No.30-31</td><td>
<table>
<tr><th>S. No.</th><th>Evaluation Criteria</th><th>Maximum Marks</th><th>Qualifying Marks</th></tr>
<tr><td>1</td><td>Firm must have done at least 05 (five) similar work of project cost 1 Crore or more for LiDAR survey of an area in last 5(five) years (2018-19, 2019-20, 2020-21, 2021-22, 2022-23) and the same LiDAR survey work must be completed and approved by competent authority in all respects.</td><td>25</td><td rowspan="5">70</td></tr>
<tr><td>2</td><td>Firm should have average annual turnover in the last three financial years from the date of publication of the EOI (Last 3 (three) financial years read as 2019-20, 2020-21, 2021-22)</td><td>25</td></tr>
<tr><td>3.</td><td>Submission of Approach, Methodology and Work plan</td><td>25</td></tr>
<tr><td>4.</td><td>Equipment’s required (owned/leased)</td><td>25</td></tr>
<tr><td></td><td>Total Points -</td><td>100</td><td>70</td></tr>
</table>
</td><td>
<table>
<tr><th>S. No.</th><th>Evaluation Criteria</th><th>Maximum Marks</th></tr>
<tr><td>1.</td><td>“MINIMUM ELIGIBILITY CRITERIA”
Technical capabilities: as per clause 7.1.1 of Expression of interest(EOI)

To be submitted in annexure-2</td><td>(50 Marks)

• 2 Projects- 10 Marks

(5 Marks will be awarded for each additional Hill project)

(2.5 Marks will be awarded for each additional Non-Hill project)

Note: However Maximum marks awarded will be 50</td></tr>
<tr><td>2.</td><td>Equipment’s required (owned/leased)

To be submitted in annexure-8</td><td>(50 Marks)</td></tr>
</table>
</td></tr>
</table>

S. No.	Clause No.	As Existing	As Amended
1	2	3	4

S. No.	Items	Minimum quantity	Ownership /Lease	Documents to be submitted	Marks
1.	**Fully equipped Drone /Helicopter/UAV based/Aircraft for LiDAR survey**				
a	Class 1 LiDAR scanner for drone operations having a serviceable altitude range of minimum 75m/AGL with point rate of 240,000pts/sec translating more than 25points/m²	1	Own /Lease	I. Invoice copy ii. Lease agreement showing affirmed availability of the equipment for the successful and complete implementation of the Project along with invoice copy of the owner. iii. Copy of Import Documentation or similar ownership documents AND iv) Data Sheet of equipment mentioning these technical specifications along with equipment manufacturer webpage	50
b	Drones & Unmanned Aerial Vehicles/Helicopter /Aircraft	1	Own /Lease		

S. No.	Clause No.	As Existing	As Amended
1	2	3	4

				printout
c	DGPS (dual frequency, at least 200 channels)	4	Own	i) Invoice Copy
d	Aerial Medium Format Camera (above 50 megapixel)	1	Own	i) Invoice Copy
e.	LiDAR Pre & post processing software	1	Own	i) Invoice Copy

NOTE:(i) Firms having ownership of equipment's mentioned in clause "EQUIPMENT REQUIRED" will be given additional 2 marks for each instrument owned by that firm. However Maximum marks awarded will be 50

	Total Points -	100

Minimum Qualifying Marks: *75 Marks*

<table>
<tr><th>S. No.</th><th>Clause No.</th><th>As Existing</th><th>As Amended</th></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td></td><td>8. "EVALUATION OF THE OFFER".

8.3. "Experience Criteria",
Pg.No.31</td><td>
<table>
<tr><th>S. No.</th><th>Evaluation Parameter</th><th>Marks</th></tr>
<tr><td>1</td><td>Firm must have done at least 05 (Five) similar work of project cost 1 Crore or more for LiDAR survey of an area in last 5(five) years (2018-19, 2019-20, 2020-21, 2021-22, 2022-23) and the same LiDAR survey work must be completed and approved by competent authority in all respects.</td><td>25 marks</td></tr>
<tr><td>1.1.</td><td>Up to 5 relevant projects of similar work of project cost 1 Crore or more for LiDAR survey of an area of similar nature in last 5(five) years (2018-19, 2019-20, 2020-21, 2021-22, 2022-23).</td><td>05 Marks for each project with maximum up to 25 Marks</td></tr>
<tr><td></td><td>Total Marks</td><td>25 Marks</td></tr>
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</td><td>DELETED</td></tr>
</table>

<table>
<tr><th>S. No.</th><th>Clause No.</th><th>As Existing</th><th>As Amended</th></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>4</td><td>8. "EVALUATION OF THE OFFER".
8.4."Financial Capabilities": Pg.No.31</td><td>
<table>
<tr><th>S. No.</th><th>Criteria</th><th>Maximum Marks</th></tr>
<tr><td>1</td><td>Firm should have average annual turnover in the last three financial years from the date of publication of the EOI (Last 3 (three) financial years read as 2019-20, 2020-21, 2021-22) will be given marks mentioned below.

INR 05 Lakhs-10 Lakhs Marks-05
INR 10 Lakhs – 20 Lakhs Marks-10
INR 20 Lakhs – 30 Lakhs Marks-15
INR 30 Lakhs – 40 Lakhs Marks-20
INR 40 Lakhs – 50 Lakhs Marks-25</td><td>25 marks</td></tr>
<tr><td></td><td>Total Marks -</td><td>25 marks</td></tr>
</table>
</td><td>DELETED</td></tr>
</table>

<table>
<tr><th>S. No.</th><th>Clause No.</th><th colspan="3">As Existing</th><th>As Amended</th></tr>
<tr><td>1</td><td>2</td><td colspan="3">3</td><td>4</td></tr>
<tr><td>5.</td><td>8."EVALUATION OF THE OFFER".

8.5. "Description of Approach, Methodology and Work Plan on the basis of Site Appreciation" : Pg.No.31-32</td><td colspan="3"><table>
<tr><th>S. No.</th><th>Criteria</th><th>Maximum Marks</th></tr>
<tr><td>1</td><td><u>Technical Approach and Methodology</u>: In this chapter please explain your understanding of the objectives of the assignment, approach to the services, methodology for carrying out the activities and obtaining the expected output, and the degree of detail of such output. You should highlight the problems being addressed and their importance and explain the technical approach you would adopt to address them. You should also explain the methodologies you propose to adopt and highlight the compatibility of those methodologies with the proposed approach.</td><td>15 marks</td></tr>
<tr><td>2</td><td><u>Work Plan on the basis of site appreciation</u>: In this chapter please propose the main activities of the assignment, their content and duration, phasing and interrelations, milestones (including interim approvals by the Client), and delivery dates of the reports. The proposed work plan should be consistent with the technical approach and methodology, showing understanding of the Work/ Project Site and also the TOR and ability to translate them into a feasible working plan.</td><td>10 marks</td></tr>
</table></td><td>DELETED</td></tr>
</table>

<table>
<tr><th>S. No.</th><th>Clause No.</th><th>As Existing</th><th>As Amended</th></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>6.</td><td>8. “EVALUATION OF THE OFFER”.

8.6. Equipment’s required : Pg.No.33</td><td>
<table>
<tr><th>S.No.</th><th>Items</th><th>Minimum quantity</th><th>Ownership/Lease</th><th>Documents to be submitted</th><th>Marks</th></tr>
<tr><td>1.</td><td colspan="5">For Aerial LiDAR Survey</td></tr>
<tr><td>a</td><td>Class 1 LiDAR scanner for drone operations having a serviceable altitude range of minimum 75m/AGL with point rate of 240,000pts/sec translating more than 25points/m²</td><td>1</td><td>Own /Lease</td><td>I. Invoice copy
ii. Lease agreement showing affirmed availability of the equipment for the successful and complete implementation of the Project along with invoice copy of the owner.
iii. Copy of Import Documentation or similar ownership documents AND
iv) Data Sheet of equipment mentioning these technical specifications along with equipment</td><td>05</td></tr>
</table>
</td><td>DELETED</td></tr>
</table>

S. No.	Clause No.	As Existing					As Amended
1	*2*	*3*					*4*
					manufacturer webpage printout		
		b	Drones & Unmanned Aerial Vehicles	1	Own /Lease	Adequate evidence of the firms/Institutions capacity to lease Drones & Unmanned aerial vehicles (fully capable of Aerial LIDAR survey scoped in this Project), on ready accessibility & uninterrupted availability basis, for regular use over prolonged period [sufficient for this Project]; like some existing or freshly made Agreements with Owners of Drones & Unmanned Aerial Vehicles	05

<table>
<tr><th>S. No.</th><th>Clause No.</th><th>As Existing</th><th>As Amended</th></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>c</td><td>DGPS (dual frequency, at least 200 channels)</td><td>8</td><td>Own</td><td>Invoice Copy</td><td>05</td></tr>
<tr><td>d</td><td>Aerial Medium Format Camera (above 50 megapixel)</td><td>1</td><td>Own</td><td>i) Invoice Copy,
ii) Copy of Import Documentation or similar ownership documents Or lease copy
iii) Data Sheet of equipment</td><td>05</td></tr>
<tr><td>e.</td><td>LiDAR Trajectory Pre-processing software</td><td>1</td><td>Own</td><td>i) Invoice Copy,</td><td>05</td></tr>
</table>
</td><td></td></tr>
<tr><td>7.</td><td>9.PAYMENT TERMS.

Pg.No.33</td><td>
<table>
<tr><th>Sr. No.</th><th>Activities</th><th>Payment Schedule Breakup (in % of the Project Cost)</th></tr>
<tr><td>1</td><td>Provision of ground control points including check points, flying and data acquisition and approved by ULMMC</td><td>20%</td></tr>
</table>
</td><td>Payment schedule will be shared at the time of issuance of Request for quotation/bid document.</td></tr>
</table>

<table>
<tr><th>S. No.</th><th>Clause No.</th><th>As Existing</th><th>As Amended</th></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>2</td><td>Pre Processing and generation of Ortho rectified image (ORI) Contours and approved by ULMMC</td><td>30%</td></tr>
<tr><td>3</td><td>Post Processing for generation of DEM (0.5 m) and Classified LIDAR Point cloud, Post generation for DSM,DTM and approved by ULMMC</td><td>30%</td></tr>
<tr><td>4</td><td>Delivery of ORI & DSM,DTM and other final Deliverables, final approval and satisfaction report from the client</td><td>20%</td></tr>
<tr><td></td><td>Total</td><td>100%</td></tr>
</table>
</td><td></td></tr>
<tr><td>8.</td><td><u>“ANNEXURE – 3”</u>
Minimum Financial Capabilities

Pg.No.40</td><td>FORMAT FOR CA CERTIFICATE (DIN number to be mentioned in all CA certified documents)

We hereby certify that average revenue from advisory services to state/ central government / Multilateral Organizations in the last three financial years (2020-21, 2021-22, and 2022-23).</td><td><u>DELETED</u></td></tr>
</table>

S. No.	Clause No.	As Existing	As Amended
1	*2*	*3*	*4*
9.	"ANNEXURE – 6" **Financial turnover capabilities** **Pg.No.43**	**FORMAT FOR CA CERTIFICATE (DIN number to be mentioned in all CA certified documents)** We hereby certify that average revenue from advisory services to state/ central government / Multilateral Organizations in the last three financial years (2020-21, 2021-22, and 2022-23).	**DELETED**
10.	**Clause-4: "EXPRESSION OF INTEREST", point 4.4.1., Pg. 7.**	**Detailed Technical Specification** Detailed Scope of Drone\Loco\Trolley mounted LiDAR Survey	**Detailed Technical Specification** Detailed Scope of Drone\ Loco\ Trolley \ Aircraft \Helicopter mounted LiDAR Survey

Note: Rest of the Terms & Conditions of the Bid Document of EOI shall remain same.

(Dr. Ranjit Kumar Sinha)
Director General
ULMMC

eProcurement System Government of Uttarakhand

Tender Details

Date : 17-Jul-2025 12:20 PM

Print

Basic Details

Organisation Chain	DG - Uttarakhand Landslide Mitigation and Management Center (ULMMC) Dehradun||Addl. Director General||Design Engineer||Assistant Engineer-1		
Tender Reference Number	129/27/ULMMC/2023		
Tender ID	2023_ULMC1_61265_1	**Withdrawal Allowed**	Yes
Tender Type	Open Tender	**Form of contract**	Empanelment
Tender Category	Services	**No. of Covers**	1
General Technical Evaluation Allowed	No	**ItemWise Technical Evaluation Allowed**	No
Payment Mode	Offline	**Is Multi Currency Allowed For BOQ**	No
Is Multi Currency Allowed For Fee	No	**Allow Two Stage Bidding**	No

Payment Instruments

Offline	S.No	Instrument Type
	1	DD - Demand Draft

Cover Details, No. Of Covers - 1

Cover No	Cover	Document Type	Description
1	Fee/PreQual/Technical/Finance	.pdf	Technical Proposal

Tender Fee Details, [Total Fee in ₹ * - 5,000]

Tender Fee in ₹	5,000		
Fee Payable To	ADG ULMMC	**Fee Payable At**	Dehradun
Tender Fee Exemption Allowed	Yes		

EMD Fee Details

EMD Amount in ₹	0.00	**EMD Exemption Allowed**	No
EMD Fee Type	fixed	**EMD Percentage**	NA
EMD Payable To	Nil	**EMD Payable At**	Nil

Click to view modification history

Work /Item(s)

Title	Empanelment of Firms for conducting Engineering Geological investigation, Geophysical Investigation, Geotechnical Investigation and Slope stability assessment in Uttarakhand state				
Work Description	Empanelment of Firms for conducting Engineering Geological investigation, Geophysical Investigation, Geotechnical Investigation and Slope stability assessment in Uttarakhand state				
Pre Qualification Details	Please refer Tender documents.				
Independent External Monitor/Remarks	NA				
Show Tender Value in Public Domain	No				
Tender Value in ₹	30,00,000	**Product Category**	Consultancy	**Sub category**	NA
Contract Type	Empanelment	**Bid Validity(Days)**	180	**Period Of Work(Days)**	1825
Location	Dehradun	**Pincode**	248001	**Pre Bid Meeting Place**	Dehradun
Pre Bid Meeting Address	4th Floor, DDPM Tower, Haridwar Bypass Road, Dehradun	**Pre Bid Meeting Date**	31-Jul-2023 03:30 PM	**Bid Opening Place**	Dehradun
Should Allow NDA Tender	No	**Allow Preferential Bidder**	No		

Critical Dates

Publish Date	25-Jul-2023 09:00 AM	**Bid Opening Date**	06-Oct-2023 03:00 PM
Document Download / Sale Start Date	25-Jul-2023 09:00 AM	**Document Download / Sale End Date**	06-Oct-2023 12:00 PM
Clarification Start Date	NA	**Clarification End Date**	NA

Bid Submission Start Date	14-Aug-2023 11:00 AM	Bid Submission End Date	06-Oct-2023 12:00 PM

Tender Documents

NIT Document

S.No	Document Name	Description	Document Size (in KB)
1	Tendernotice_1.pdf	NIT	383.53

Work Item Documents

S.No	Document Type	Document Name	Description	Document Size (in KB)
1	Tender Documents	EOI.pdf	Empanelment Document	1080.73

Latest Corrigendum List

S.No	Corrigendum Title	Corrigendum Type	View
1	Extension of Date	Date	
2	Technical Evaluation	Technical Bid	

Bid Openers List

S.No	Bid Opener Login Id	Bid Opener Name	Certificate Name
1.	shantanu_cbri@yahoo.co.in	Shantanu Sarkar	SHANTANU SARKAR
2.	dpm.sc.juidco@gmail.com	Sarthak Chaudhary	SARTHAK CHAUDHARY
3.	masterankitsati@gmail.com	Ankit Sati	ANKIT SATI

Tender Properties

Auto Tendering Process allowed	No	Show Technical bid status	Yes
Show Finance bid status	Yes	Stage to disclose Bid Details in Public Domain	Technical Bid Opening
BoQ Comparative Chart model	NIL	BoQ Compartive chart decimal places	2
BoQ Comparative Chart Rank Type	NIL	Form Based BoQ	No

Tender Inviting Authority

Name	Director General, ULMMC
Address	4th Floor, DDPM Tower, Haridwar Bypass Road, Dehradun

Tender Creator Details

Created By	Sarthak Chaudhary
Designation	Assistant Engineer
Created Date	24-Jul-2023 06:00 PM