

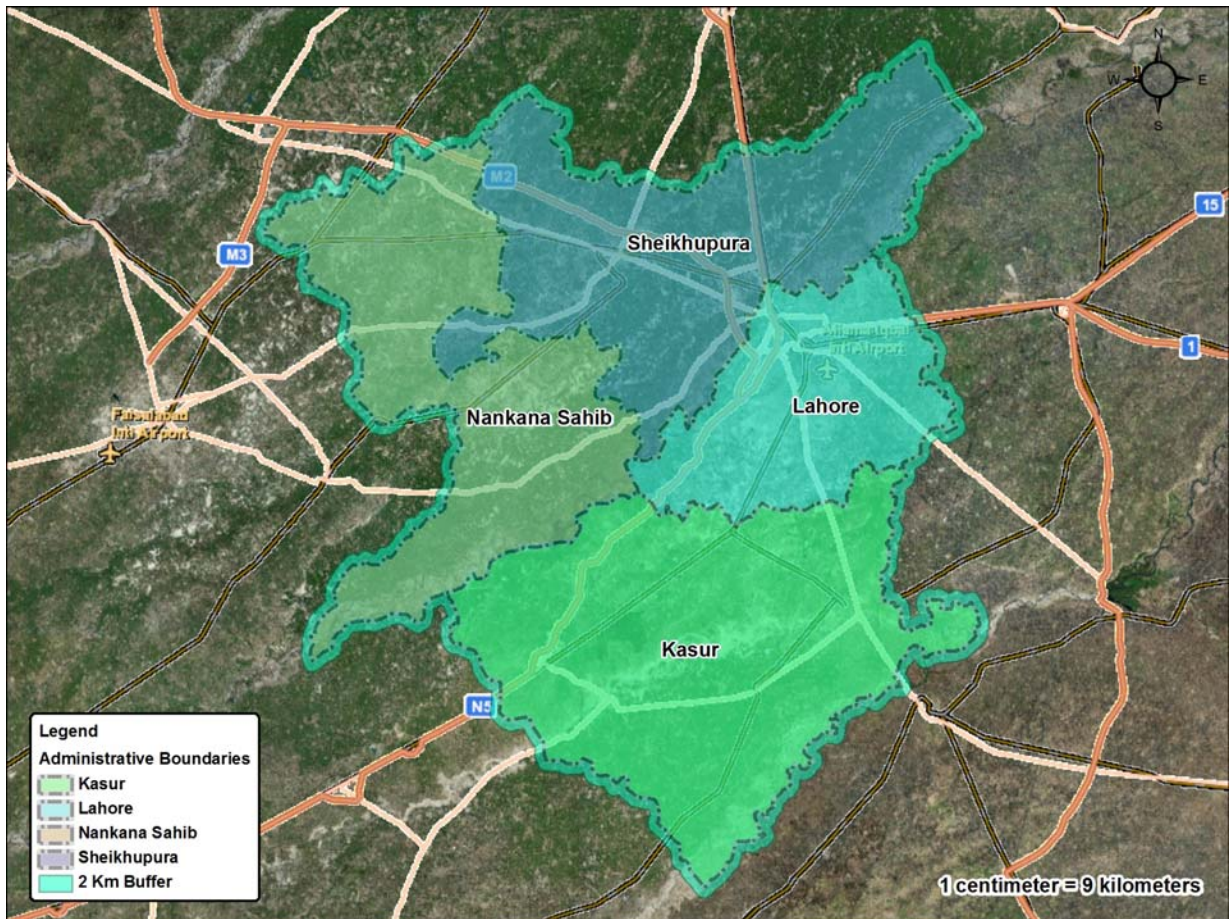
TENDER DOCUMENTS FOR PROCUREMENT OF STEREO-SATELLITE IMAGERY AND DIGITAL TERRAIN MODEL FOR LAHORE DIVISION

LDA intends to procure stereoscopic satellite imagery and digital surface model for Lahore Division for use in present and future planning studies. Invited sealed bids are solicited from reputed national bidders having sound Geographic Information System (GIS) experience.

Competitive bidding shall be held under the 'single stage two envelopes' procedure as defined in Punjab Procurement Rules 2014.

AREA OF INTEREST

Area of Interest is the administrative border of Lahore Division (comprising Lahore, Sheikhupura, Kasur and Nankana Sahib districts) with a 2km-buffer. It is as follows:



KML file of the AOI is accessible at http://www.lda.gov.pk/lahore_division_boundary_buffer.kml

SCOPE OF PROCUREMENT

Field survey to establish Ground Control Points (GCP)	<p>Supplier shall establish GCPs in AOI with a minimum accuracy of 30cm using 16 decimal digit coordinates referenced to the Survey of Pakistan projection system at:</p> <ul style="list-style-type: none">▪ each grid point of a 5km grid▪ abrupt changes(1m or greater) within each grid square
Acquisition of stereo satellite imagery	<p>Supplier shall provide freshly acquired panchromatic, multispectral and in-track stereo imagery stereo satellite imagery with a maximum Ground Sampling Distance (GSD) of 40cm.</p> <ul style="list-style-type: none">▪ Satellite imagery may only be acquired from a vendor that has duly authorized the Supplier for the purpose (<i>proof required</i>).▪ Satellite imagery should be free of any cloud, fog, humidity, and precipitation cover or any other atmospheric disturbances.▪ Data shall comprise both panchromatic and multispectral bands and all metadata, including Rational Polynomial Coefficients (RPC).▪ Data shall be acquired in GeoTIFF format using WGS84/UTM 43 projection system.
Digital Surface Model (DSM)	<p>Supplier shall supply a non-overlapping, tiled-grid DSM with a resolution of 1x1m that has been derived from the acquired stereo satellite imagery and processed to remove any anomalies such as holes, spikes or other induced artifacts. <i>Absolute vertical accuracy of any ground point shall be at least 0.5m.</i></p>
Digital Terrain Model (DTM)	<p>Supplier shall supply a non-overlapping, tiled-grid DTM with a resolution of 1x1m that has been derived from the acquired stereo satellite imagery and processed to remove any anomalies such as holes, spikes or other induced artifacts. <i>Absolute vertical accuracy of any ground point shall be at least 0.5m.</i></p> <ul style="list-style-type: none">▪ Break lines shall be collected at naturally or man-made features.▪ Elevated surfaces and structures such as road and bridges shall be modeled in the DTM to allow for correction during the ortho-production process.▪ Spot heights shall indicate high and low spots.
Normalized Digital Surface Model (NDSM)	<p>Supplier shall generate a Normalized Digital Surface Model (NDSM), in which the terrain is set to a standard of zero, i.e. by subtracting the Digital Terrain Model (DTM) from the digital surface model (DSM):</p> $\text{NDSM} = \text{DSM} - \text{DTM}$ <ul style="list-style-type: none">▪ Model shall simplify the distinction between elevated and non-elevated objects, permit direct measurement of object heights, and distinguish between streets, elevated vegetation, and structures.
Contour map	<p>Supplier shall provide a noise-free contour map generated from the</p>

	DTM at 2m intervals.
Ortho-rectified imagery	<p>Supplier shall provide ortho-rectified imagery for both panchromatic and multispectral bands as well as a final pan sharpened image.</p> <ul style="list-style-type: none"> ▪ Images shall be seamless, tone-matched and corrected for brightness and contrast. ▪ Images shall be geo-referenced, edge-matched and free of any pixel gaps. ▪ Supplier shall correct elevated structures during the ortho-production process according to the requirements for the DTM.
Output format	<p>All data shall be provided in a tile scheme of 10x10km on a hard disk drive (HDD) in GeoTIFF format (32-bit) using the standards of Survey of Pakistan.</p> <ul style="list-style-type: none"> ▪ Projection: Lambert Conformal Conic Double Standard Parallel. ▪ Datum: Everest Pakistan. ▪ Map units: Meters.
Open-source software	<p>Supplier shall implement an open-source solution (such as PostGIS + GeoServer + GeoWebCache + OpenLayers, for e.g.)to serve all data over the internet.</p> <ul style="list-style-type: none"> ▪ Software shall serve ortho-photography as GeoTIFFs via Web Map Service (WMS) or other standard protocol. ▪ Software shall serve elevation data and information on geographic objects using open standards. ▪ All data shall be viewable in a point-and-click graphical format with authentication via both desktop client (such as Quantum GIS, for e.g.)and web browser. ▪ Database shall allow advanced analysis and query functions of elevation data and geographic objects to enable external access by custom applications. ▪ Open source solution shall be implemented on existing LDA hardware infrastructure.
Commercial off-the-shelf (COTS) GIS desktop application	<p>Supplier shall procure professional commercial off-the-shelf (COTS) GIS desktop application such as ArcGIS with a single-user license.</p> <ul style="list-style-type: none"> ▪ Application shall be pre-loaded with all data provided by the Supplier and be capable of editing, managing and extending this data. ▪ Application shall be capable of creating and manage data, maps and analytical models. ▪ Application shall be capable of carrying out the advanced GIS operations related to mapping and spatial analysis that were used in generating the deliverables of this procurement. ▪ Supplier shall install and configure application on existing hardware reserved for this purpose in the LDA premises.

Manuals, standards, guidelines and SOPs

Supplier shall be required to create and submit operating documentation for data use, data maintenance, model extension, and integration with present and future GIS information.

Support

Supplier shall provide technical support for up to one year from completion of this procurement.

TERMS & CONDITIONS

1. Only firms that are authorized dealers of satellite imagery producers may bid for this tender. Proof of authorization that is current on the date of submission shall need to be included with the bid in order to be deemed eligible.
2. Bidders are required to submit a bid security of **two (2) percent** of the bid amount in the form of a call deposit receipt (CDR) or pay order issued in the name of Lahore Development Authority. Bid security must be enclosed in the financial bid envelope.
3. Sealed bids are to be submitted no later than **2:00pm October 15, 2014** at the following address:

DIRECTOR (C&I), LDA
3rd FLOOR, NEW LDA OFFICE BUILDING,
467, D-II, KHIYABAAN-E-FIRDOUSI,
JOHAR TOWN, LAHORE.
Phone No.: (042) 99262346

4. Sealed bids shall be opened on the same day at 2:30pm in the presence of bidders or their authorized representatives. Bids are required to be valid for up to sixty (60) days from bid submission.
5. Sealed bids are required to contain two sealed envelopes labeled “**TECHNICAL BID**” and “**FINANCIAL BID**” as per the ‘single stage two envelope’ bidding procedure defined in the Punjab Procurement Rules 2014.
6. Technical bids should be able to demonstrate that the proposed solution meets all of the technical requirements defined in this document. In addition to such proof, technical bids shall also be required to contain complete contact details, proof of authorization by satellite image vendor and the following legal particulars:
 - Proof of incorporation or registration
 - National Tax No.
 - Sales Tax Registration No.
 - Undertaking that the bidder has never been blacklisted by a public entity.
7. Financial bids of only technically responsive bidders shall be opened. Financial bids of technically non-responsive bidders shall be returned unopened.
8. Financial bids must include itemized bids of each component of the procurement defined in Scope of Procurement of this tender along with any applicable taxes, fees and duties clearly listed separately.
9. Lowest financial bid shall be awarded the procurement contract. LDA reserves the right to drop any component of the procurement in the final procurement contract.
10. Concealment or misrepresentation of facts shall be sufficient reason for disqualification at any stage of the process and encashment of the bid security may be revoked in such case.

11. Bid security shall be returned to unsuccessful bidders within one week of award of procurement contract. Bid security of successful bidder shall be returned after successful completion of the procurement. Failure to complete the procurement may result in encashment of the bid security by LDA.
12. LDA reserves the right to reject all bids and terminate the bidding process without providing any justification.