

**Selection of Survey Agency for Drone  
Topography Survey & Bathymetry (Hydrology)  
Survey, for 3 Islands i.e. Ajad, Piram, and Kadia  
Islands of Gujarat**



Gujarat Infrastructure Development Board  
THE INFRASTRUCTURE FACILITATOR



IDA  
ISLAND  
DEVELOPMENT  
AUTHORITY

---

---

**Selection of Survey Agency for Drone Topography Survey & Bathymetry (Hydrology) Survey, for 3 Islands i.e. Ajad, Piram, and Kadia Islands of Gujarat**

**Project Location & Details of the Islands to be surveyed are as under:**

Sr. No	Island Name	District	Area (Ha)	Latitude	Longitude	Nearest access point
1	Ajad Island	Devbhumi Dwarka	138	22°22'55.2"	69°19'45.6"	Okha
2	Piram Island	Bhavnagar	74.5	21°35'57.	72°21'09.5"	Ghogha
3	Kadia Bet	Surat	1002	21°07'56.28"	72°40'55.56"	Hazira & Dumas Beach

**Purpose of Work:** The work to be performed under this contract is to be used as a basic site plan mapping information to support planning and engineering design.

**1. Scope of work**

**A. Bathymetry(Hydrology) and Water Testing Survey:**

- a) The work shall be carried out by using the conventional method & echo-sounding method.
- b) 200 Metres from the H.T.L (plus 50 metres from the visible surface of the water) and also provide the shoreline of the landside, using Single beam or Multi-beam echo sounder and suitable equipment to cover very shallow and dry areas.
- c) Base map indicating various water/ground features including existing environment features.
- d) Environmental Features such as Mangrove area, Mud Flats, Saltpans, Fishponds, High Tide & Low Tide Level.
- e) Data such as Tidal Information, Tide Measurement, Water current, Waves (Offshore wave condition & Permissible wave condition), Relative Humidity, Temperature and Rainfall.
- f) All Existing details on the Edge of water, which include roads, drainage lines, trees, Electrical lines & poles, Telephone lines & poles, H.T. lines, Manholes, Natural/Artificial Drain etc. shall be marked using a Total Station having an angle accuracy of 2 seconds.
- g) Contour interval shall be 0.25 but not exceeding 0.5 m and cross-sections shall be at 25.0m interval & along the cross-section the sounding will be at 10.0m.
- h) Mapping of all watersheds and catchment areas.

- 
- i) Soil type and cover in catchment area, including hydrological soil group, antecedent moisture condition, runoff condition assessment.
  - j) Flood estimations and area of submergence analysis, including identifying the flood safe areas on the land parcel.

## **B. Drone Topographic Survey**

1. Conduct a topographical survey of the existing planimetric details using a drone survey for three Islands.
2. To survey the entire area, update and carry out ground-truthing for the area.
3. Capturing all important landmarks like schools, hospitals, Hotels, Govt offices, Banks, ATMs, transformers, temples, mosques, dargahs, HT towers, Mobile towers, trees and poles (EB, telephone etc.), Lighthouse, temporary structures name of the streets etc., in English.
4. Capturing width of the road, type of road, width and type of berms, size of drain, type of drain (if it is open and visible through drone images). Spot levels on existing roads & canals at every 10 mt interval
5. All the edges of the buildings shall be captured with dimensions and shown on the map. The no of floors of the building represents by the heights of the building along the street if available.
6. Vegetation (trees and shrubs), other physical features like damp areas, pits, rocky areas, hillocks/hills, natural drains, streams and other water bodies etc. to be mapped.
7. Contour survey with a grid of 10 m x 10 m and map to be prepared with a contour of 0.25 m interval.
8. Fix the topo station map and overlap it with the revenue map of that particular region.

### **Map Content:**

- **Co-ordinate grid:** The applicable co-ordinate system shall be properly maintained and spacing the grids at 100m and East & West value in bottom and North & south value on the left side. Based on the client's requirement

- 
- **Control:** All horizontal and vertical ground control points shall be shown on the maps.
  - **Planimetric:** The maps shall contain all surface-visible features, structures, planimetric features and utility details that are visible and identifiable.

## **2. Items/ Formats to be delivered:**

For the above-mentioned following are the deliverables to be provided in Shapefile, CAD, Tiff, LAS format and other drone data (raw images and video).

### **A. Bathymetry(Hydrology) and Water Testing Survey:**

- a) A Drawing showing contours with sounding/levels and other features shall be prepared in AutoCAD format.
- b) The drawing shall include the direction of magnetic north and all the spot levels as surveyed on site.
- c) All the final Drawings (3 sets on paper) in 1:1000 scale and one soft copy on CD in 1:1 scale.
- d) H.T.L and L.T.L lines, shorelines from the landslide
- e) 3D representation of the seabed bathymetry in \*.SD file format
- f) Geo-referenced TIFF image in floating point format
- g) Bathymetry Chart & Isopach Chart
- h) Reports with observations, SWOT, conclusion and other analysis.

### **B. Drone Tophographic Survey**

1. 2D Orthomosaic (High-resolution tiff image)
2. 3D Point cloud (Photogrammetric 3-dimensional model)
3. LiDAR based Digital Elevation, Surface and Terrain Model (tiff image up to 3 cm ground resolution)
4. Contour elevation (elevation isoline up to 3 cm interval in CAD, shapefile or any geometry format)
5. Topographic sheet with site elevation details (contour interval shall be 1 m not exceeding 2 m)
6. Land Features includes Different type of the entities such as roads, road names, road width, Type of road, medians along roads, roadside railway tracks, buildings, trees, poles, schools, lighthouse, hospitals, temples,

---

mosques, dargahs to be shown in a different layer of the drawing in a different colour, line type/text (Cad and shapefile).

7. Topography Mapping (Land Feature marking in CAD and Shapefile format)
8. Hydrology Measurement (Catchment delineation, watershed, natural streams, flow direction, accumulation & understanding of natural drainage pattern); Tiff, Shapefile, CAD or any other geometry format.
9. Identify the drainage network with surface water bodies, along with the canal network of watershed. Identify the drainage pattern to understand the drainage density and stream frequency.
10. Terrain Analysis, Slope Mapping; Slope, Aspect, hill shade, viewshed, visibility; Tiff, Shapefile, CAD or any other geometry format
11. Locational intelligence analysis (propose the location with the different types of projects and proposal based on GIS analysis by using different types of KPIs and criteria.); shapefiles and images with basic costs of that projects.
12. Reports with observations, SWOT, conclusion and other analysis.

**3. Time Schedule** - The whole work shall be completed in all aspects within 25 days from the date of issue of the work order.

<b>Sl. No</b>	<b>Name of work</b>	<b>Deliverable format</b>	<b>Timelines</b>
1	Completing site work and survey	Use different equipments as per requirement	15 Days
2	Analysis of software, data collection from equipments, image processing and analysis	Use appropriate tools and softwares	5 Days
3	Creating report and deliverables	As specified	5 Days

#### **4. Financial proposal and Payment Terms –**

- a) The price quoted must be inclusive of all out of pocket expenses such as travel cost, Local transportation cost, Boat hiring cost, site visits, coordination cost

---

and accommodation cost (if required) for carrying out the assignment at 1. Ajad Island; 2. Piram Island; and 3. Kadia Bet in Gujarat.

- b) The rates are to be quoted exclusive of GST.
- c) No other cost will be paid/reimbursed.
- d) 100% Payment will be made after acceptance and taking all approval from authority by verifying data of all deliverables.

## **5. Damages due to delay in Submission**

In case the above Survey reports are not submitted within the period stipulated as above due to reasons attributable to the Survey Agency, the Survey Agency will be liable to pay at the discretion of the Client (GIDB), liquidated damage to the Client of 0.5% per day on the contract price subject to a maximum of 40% reckoned on the contract value.

## **6. Others Terms & Conditions**

- a) The Applicant shall be fully responsible for the accuracy of surveys.
- b) The selection of Survey Agency would be done based on lowest cost (L1), subject to pre-qualification.
- c) The Survey Agency shall be responsible for all the necessary instruments, equipment and software required to carry out the assignment.
- d) The Survey Agency shall at its cost take out and maintain adequate professional liability insurance as well as adequate insurance against third party liability and loss of or damage to equipment purchased in whole or in part. The Authority undertakes no responsibility for third party liability and loss of or damage to equipment used by the Survey Agency to carry out the assignment.
- e) The Authority undertakes no responsibility in respect of any life, health, accident, travel and other insurance which may be necessary or desirable for the Personnel of its own or subcontractors and specialists associated with the Survey Agency for the Services, nor for any members of any family of any such person.

- 
- f) In case of termination events leading to termination of the contract, it shall be done on a mutually agreeable basis.

## **7. CONFIDENTIALITY**

- a) The Survey Agency shall treat all information, report and other submissions made by them as confidential, and shall take all reasonable precautions for those having access to such materials to maintain confidence. Concerning the questionnaire and survey in this assignment, all information gathered should be treated as confidential.
- b) The Survey Agency shall use all the documents, drawings and other data and information of a proprietary nature, solely to perform and carry out the obligations on his part under the agreement and shall not disclose the same to any other person except to the extent required, in the performance of the work for the assignment and shall maintain the utmost secrecy. The Survey Agency shall bind its employees who are involved in the assignment by a suitable secrecy agreement. The Survey Agency- shall have no right to use, or reproduce, the analysis conducted under this work order for any other purpose. While engaging the services of external specialists, the survey agency - shall also obtain a suitable confidentiality undertaking in this respect from the external specialists and submit their concurrence to the client. The selected agency cannot share the data without the client's permission.
- c) Except with the prior written consent of the Authority (GIDB), the Survey Agency and the Personnel shall not at any time communicate to any person or entity any confidential information disclosed to them for the Services, nor shall the Consultant or the Personnel make public or inform anyone, directly or indirectly, any such information received by them or any recommendations formulated in the course of or as a result of the Services. Confidential Information for this clause means all information that has been marked as confidential at the time of disclosure.
- d) These clauses (a) and (b), shall survive the termination of this Agreement. However, the reports submitted by the Survey Agency to the Authority, become the property of the Authority and the Authority is free to use any/ all

---

information mentioned in the report, procedures specified in the report, suggestions/ conclusions made in the report and any such other information based on the report.

## **8. BID SUBMISSION**

### **a) Technical Bid:**

#### **1. The Technical Bid shall contain the following:**

- a. Survey Agency's Profile.
- b. Past Project Experience of the Firm in the last five years in the format specified at 'Format A1 & A2':
  - i. **Bathymetry (Hydrology) Survey:** At least Two surveys having 50 Metres from the H.T.L each; **AND**
  - ii. **Drone Topography Survey:** At least Two projects in drone topographic surveys, spatial analysis/ contour elevation mapping/ digital terrain modelling mapping/ topography mapping for an area of minimum 20 Hectares each.
- c. Work plan and detailed process with methodology including all equipment specifications with sample examples of maps and other reports, separately for Bathymetric Survey and Topography Survey.
- d. Details of qualified and experienced manpower to be involved in this assignment in the format specified at 'Format A3'.

The Survey Agency shall submit the "**TECHNICAL BID**" in the format specified in **Annexure A** and seal it in an envelope and mark the envelope as "**Selection of Survey Agency for Drone Topography Survey & Bathymetry (Hydrology) Survey, for 3 Islands i.e. Ajad, Piram, and Kadia Islands of Gujarat.**"

### **b) Financial Bid:**

- Online submission through Nprocure <https://nprocure.com> [Tender ID - -----]
- Tender Fee – Nil



- 
- a. The Survey Agency shall submit the Financial Bid in the format specified in 'Format B' on Nprocure.
  - b. The Applications (Technical/Financial) should be submitted before 15:00 hours IST on 14<sup>th</sup> November 2022. No applications after the due date shall be considered for evaluation.
  - c. The Technical Proposal should be submitted at GIDB's Office.

**ATTN. of:** Smt. Avantika Singh Aulakh, IAS  
**Designation:** Chief Executive Officer,  
**Address:** Gujarat Infrastructure Development Board  
Block No. 18, 8th Floor, Udyog Bhavan,  
Gandhinagar-382 017  
Phone No: 91-079-23232701/ 4,  
Fax No: 91-079-23222481

- d. The Financial Proposal shall be submitted only through <https://gidb.nprocure.com> as per Format B.
- e. The Technical Proposal shall be opened at 17:00 hours IST on 14<sup>th</sup> November 2022 at GIDB's Conference Room.
- f. The schedule for the opening of the Financial Proposals will be conveyed to the qualified bidders.

---

## Annexure A – Technical Bid

1. Survey Agency's Profile
  
2. **Past Project Experience of the Firm in the last five years** [to be submitted along with work order (mandatory for completed and ongoing assignments) and completion certificate (mandatory for completed assignments)].

### Format-A1: Bathymetry Survey Experience

Sl. No.	Client	Location	Survey coverage area (Distance from H.T.L.)	Project Description
1				
2				
3				

### Format-A2: Drone Topography Survey Experience

Sl. No.	Client	Location	Area (Ha.)	Project Description (specifically highlight spatial analysis/ contour elevation mapping/ digital terrain modelling mapping/ topography mapping undertaken in the project)
1				
2				
3				

3. Work plan and detailed process with methodology including all equipment specifications with sample examples of maps and other reports, separately for Bathymetric Survey and Topography Survey.
  - a. Detailed process and methodology
  - b. Samples of maps and report contents
  - c. Equipment specifications
  - d. Work plan

---

4. Details of Manpower to be involved in this assignment

**Manpower Proposal Format-A3**

For completing the Survey assignment, the following manpower will be used.

<b>Sl. No.</b>	<b>Designation</b>	<b>Qualification</b>	<b>Experience in years</b>	<b>Brief Profile</b>	<b>Responsibilities allocated in this Work</b>
<b>1</b>					
<b>2</b>					
<b>3</b>					

---

**Annexure B - FINANCIAL PROPOSAL**  
**(to be submitted online on Nprocure)**  
**Financial Proposal Format-B**

	<b>Amount (Rs.)</b>
Lump-sum fee amount for Bathymetry (Hydrology) and Water Testing Survey, Drone Topography Survey for 3 Islands i.e. Ajad, Piram, and Kadia Islands of Gujarat	-----
Amount in Words Rupees....	

Note:

1. The price quoted must be inclusive of all out of pocket expenses such as travel cost, Local transportation cost, Boat hiring cost, site visits, coordination cost and accommodation cost (if required) for carrying out the assignment at 1. Ajad Island; 2. Piram Island; and 3. Kadia Bet in Gujarat.
2. The rates are to be quoted exclusive of GST.
3. No other cost will be paid/reimbursed.
4. No escalation would be allowed due to changes in taxes and duties;
5. No conditions should be attached to the price proposal;
6. In case of any discrepancies in the prices mentioned in the figures and words, the prices mentioned in the words would be considered as the final price;

Signature\_\_\_\_\_

Full Name\_\_\_\_\_

Designation\_\_\_\_\_

Name of the Firm\_\_\_\_\_

Address\_\_\_\_\_