

EXPRESSION OF INTEREST

For

*Intensive Flow Measurement, Bench Mark Fixing,
Topographic L-section and Cross Section of Jhimruk,
Mari and Babai River Basin*

Consulting Firm/Joint Venture:

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Prime Consultant (in case of a JV):

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Employer:
Government of Nepal
Ministry of Population and Environment
Department of Hydrology and Meteorology
Naxal, Kathmandu.

February 2017



Government of Nepal
Ministry of Population and Environment
Department of Hydrology and Meteorology

Naxal, Kathmandu

Notice No: 2/HD/DHM/073-74

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Expressions of Interest (EOI)

The Government of Nepal, Department of Hydrology and Meteorology (DHM) invites EOI (Expressions of Interest) for the purpose of short listing the qualified, eligible and experienced Companies/firms and or their joint ventures for “**Intensive Flow Measurement, Bench Mark Fixing, L-Section, Cross Section and Topographic Survey of Jhimruk(Cherneta), Mari(Nayagaun) and Babai(Chepang) River Basin**” works.

1. The budget to this purpose has been allocated by the Government of Nepal (GON) for the fiscal year 2073/074.
2. Experienced, eligible and interested Consulting Firms or companies are invited to submit their EOI, either alone or in joint venture with other firms with a certified copy of Consultancy /Company Registration Certificate, VAT and Tax Clearance (2072/73)/ Tax Return Submission receipt for the last fiscal year.
3. EOI documents could be obtained free of cost from DHM upon request during office hour on all government working days within the 15th day of the first date of publication of this notice or can also be downloaded from the website: <http://www.dhm.gov.np>. The instruction to the consultant, prescribed format, evaluation criteria, scope of the work and duration of the study and other details of the project are mentioned in the EOI. Only lead firm may obtained EOI form mentioning the names of all members of Association/JV and submitting Association/JV agreement.
4. Applications for EOI must be clearly marked “**Intensive Flow Measurement, Bench Mark Fixing, L-Section, Cross Section and Topographic Survey of Jhimruk(Cherneta), Mari(Nayagaun) and Babai(Chepang) River Basin**” and shall be submitted in sealed envelopes by companies or their joint venture received by the due date and within the specified time in the presence of the applicant or their authorized representatives. Absence of any applicant (or their authorized representative), however, shall not obstruct or prevent the opening of the EOI in any way, which must be delivered to the following address within the given time below.

Last Date of EOI Submission:- 12/11/2073 & 12:00 noon

Date of EOI opening :- 12/11/2073 & 01:00 pm

5. Certified evidences of the client reference indicating satisfactory completion of the projects along with the cost of consulting services in NRs and date of completion of the assignment only will be counted.
6. In case the day of submission of the EOI falls on a public holiday, it shall then be submitted on the following working day at same hour. Only the short-listed Consulting Firms shall be invited for RFP (Request for Proposal). During the RFP process, the consulting firm/companies will be selected in accordance with quality and cost Based Selection procedure (QCBS).
7. DHM reserves the right to shortlist any or reject all of the Firms without assigning any reasons whatsoever. Further information or clarification can be obtained from DHM during office hours.

Procurement Unit

Department of Hydrology and Meteorology

Naxal, Kathmandu

E-mail: shivaamet@gmail.com, spd_acharya@yahoo.com, cbhetuwal@yahoo.com

Website: www.dhm.gov.np

Intensive Flow Measurement, Bench Mark Fixing, L-Section, Cross Section and Topographic Survey of Jhimruk(Cherneta), Mari(Nayagaun) and Babai(Chepang) River Basin”

1. INFORMATION ON THE CONSULTING FIRM

Information shall be provided in the following format. No field shall be left vacant. In case of a joint venture, the same form shall be filled by each of the JV partners separately. The form shall be submitted in the time, date and venue as mentioned in the published notice.

1. General

Name of Firm	Address	Telephone	Email	Fax	JV Percent

Out of the above list, will be the Prime Consultant.

2. Financial Capacity

Annual turnover over the last three years are as follows. The auditor’s report/tax clearance certificates are attached.

Fiscal year	Turnover (Rs.)

3. Overall Experience*

Overall experiences of the firm in relevant work during last ten years are as follows (Work completion certificates are attached).

Name of Project	Project	Client	Contract amount (excluding VAT)	Year of completion	Description of work carried out

4. Specific Experience*

Experiences of the firm in related field during last ten years are as follows. Work completion certificates are attached.

Name of Project	Project	Client	Contract amount (excluding VAT)	Year of completion	Description of work carried out

* The firm/s shall produce certified evidences of the client reference indicating satisfactory completion of the mentioned projects along with the cost of consulting services in NRs and date of completion of the assignment are required for the consideration of that project for evaluation. Sublet works or assignment as a sub consultant shall not be considered for evaluation.

5. Human Resources

Human Resources in the company

Staff Member	Details	
	Permanent/part time	Name of personals

7. Other Resources

Other relevant resources available with us are as follows. The office layout, invoice/bill of equipment/vehicle/software/computer is attached.

Resource	Unit	Total Available	Engaged by Works on Hand
Office area	m2		
Telephone lines	line		
Photocopy, Printers	set		
Computer, Laptops	set		
vehicles(Four wheel Drive)	no		

Authorized signature:

Seal:

Date:

ANNEX 1: INFORMATION TO THE CONSULTING FIRM

General Information

Purpose of inviting the EOI:	The main purpose shall short-list suitable consulting firms for Intensive Flow Measurement, Bench Mark Fixing, L-Section, Cross Section and Topographic Survey of Jhimruk(Cherneta), Mari(Nayagaun) and Babai(Chepang) River Basin ”and related products so that proposals could be invited from them only. However, the client may extend the short-list to include additional relevant consulting firms which are capable of giving the desired output.
Format and Signing of Application:	Applicant intending to file an application in response to this EOI should submit an “Application together with the duly completed EOI form providing all the information required therein after signing in by Authorized Representative of Consulting Firm or company (in case of Joint Venture, Authorized Representative of Lead Firm) with Company’s seal in every page of EOI forms.
Minimum eligibility of the firm:	Registered consulting firms/company; registered at VAT office and tax clearance certificates.
Deadline for submission of EOI:	at or before 12 Noon (NST-Nepal Standard Time) within 12/11/2073
Number of copies to be submitted:	Two
Joint Venture:	A firm may apply to be short-listed alone or in joint venture with other firms. However once short-listed, JV partners are unchangeable.
Duration of completion:	Duration to complete the works will be 90 days from the signing of the contract agreement.
Information from the Client:	In due course of time, the shortlist shall be published on the Client’s notice board, at the website: www.dhm.gov.np . The client shall mail the short-list to each of the firms/JV submitting the EOI and initiate the process of RFP without waiting for the receipt from the firms that they have received the short-list.

ANNEX 2: EVALUATION CRITERIA**(I) Eligibility Criteria (Pass / Fail)**

<i>Sr. No.</i>	<i>Eligibility Criteria</i>	<i>Requirement</i>	<i>Compliance</i>	<i>Remarks</i>
1.	Corporate Registration	Mandatory	Yes/ NO	Pass/Fail
2.	Tax Clearance / Tax Return Submission receipt for the last fiscal year (2072/73)	Mandatory	Yes/ NO	Pass/Fail
3.	Vat Registration	Mandatory	Yes/ NO	Pass/Fail
4.	Minimum Years of Standing	The applicant or the Lead partner of J/V applicant must have min. 5years of standing.	Yes/ NO	Pass/Fail

II) Ranking Criteria (Out of 100%)

General Experience of the firm (10 marks)	Specific Experience of the firm (60 marks) Excellent = 100%, Very Good = 80%, Good = 60%, Acceptable = 40%, not acceptable = 0	Organization Profile of the firm: in terms of clarity in role and responsibility (15 marks)	Professional competency of the firm Commitment for availability of adequate number and /or experience of professionals as required by TOR (15 marks)																		
Years of Experience in the field of Hydrology (4 marks) Number of assignments carried out in the field of hydrology during last 5 years (6 marks)	Specific experience in Bench Mark Fixing, Topographic ,L-section and Cross Section survey for developing topographic survey (Number of assignments, Duration of assignment , volume of assignments in last five years will be counted)	<table border="0"> <tr> <td>Excellent</td> <td>100%</td> </tr> <tr> <td>Very good</td> <td>80%</td> </tr> <tr> <td>Good</td> <td>60%</td> </tr> <tr> <td>Acceptable</td> <td>40%</td> </tr> <tr> <td>Not Acceptable</td> <td>0%</td> </tr> </table>	Excellent	100%	Very good	80%	Good	60%	Acceptable	40%	Not Acceptable	0%	<table border="0"> <tr> <td>Excellent</td> <td>100%</td> </tr> <tr> <td>Very good</td> <td>80%</td> </tr> <tr> <td>Good</td> <td>60%</td> </tr> <tr> <td>Acceptable</td> <td>40%</td> </tr> </table> <p>(Note: Permanent staff – 100%, Temporary staff- 80%)</p>	Excellent	100%	Very good	80%	Good	60%	Acceptable	40%
Excellent	100%																				
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NOTE: The consultant should score more than 60 percent on the overall ranking criteria as mentioned above to qualify for short listing

Terms of reference:-

Project Description:

Background

The government of Nepal started hydrological and Meteorological activities in an organized manner in 1962. Hydrology and Meteorology related organization remained under various Department/Ministry at different time. In 1988 this organization became a separate department with the name Department of Hydrology and Meteorology (DHM).

The Department of Hydrology and Meteorology has been maintaining 190 hydrometric stations. Among them, 100 stations are primary stations. Some of the stations have crest stage gauges and water level recorders to measure water level fluctuations in the rivers. Most of the stations have cableway to measure discharge in the river to know the variation of flow during the year. Around 40 hydrological stations has already been automated and others are also in the process of being automatic gradually. The periodic measurements of discharges are used to develop stage-discharge relationship which is used to compute daily flows from daily water levels recorded at the site. Such daily flow series are very important for the design and planning of various water projects such as irrigation, hydropower, flood control, water supply, navigation etc.

The accuracy of daily flow series depends upon the accuracy of discharge and water level measurements, and the stage-discharge relationship. Relatively accurate stage-discharge relationship is obtained for the water level up to which measurement is done. Beyond that water level the rising curve should be extrapolated. Such extrapolation is highly erroneous and sometimes misleading if cross-section properties are not considered properly. If cross-section area, wetted perimeter, water surface slope and roughness values are obtained by survey up to highest flood level, the peak flood discharge could be computed easily using Manning's uniform flow equation. This will provide the basis for rating curve extrapolation which would be more rational.

Beside this, the cross section of river changes after every large flood and may also cause change of topography along the rivers. This changes must be assessed for flood forecasting and early warning. Thus, Department of Hydrology and Meteorology intends to prepare station cross-section properties so that adequate information would be available for the extrapolation of rating curve. In this context, DHM has planned to prepare fix Bench Mark (BM), L-Section, Cross-section and Topographic survey of 3 hydrometric stations at Jhimruk, Mari and Babai River basin in the fiscal year 2073/74 and intends to invite the services of local consultants.

Objective

The main objective of this study is to fix Bench Mark (BM), flow measurement, and carry out detail L-Section, X-section and topographic survey that is need for high flow extrapolation for the purpose of flood early warning.

Scope of work

The detail scope of the works is as following:

- The 0.15m*0.15m*0.5m concrete Bench Mark (BM) should be kept near the gauging site or near the permanent structures well above the existing high flood level so that it will be undisturbed during floods.
- Latitude, Longitude and Elevation of the station should be measured at bench mark and all level transfer to the gauge site must be referenced to this BM within a closed loop and distribution of

error should be carried out properly. The gauge should be related to the mean average sea level (masl) from the Bench Mark.

- Once the control point (BM) is fixed, the topographic survey should be done for 0.5km at upstream and 0.5km at downstream of gauging site and it should cover total width of river and 100m both sides from the firm bank or 5m above high flood level or depending upon the site condition. There should be at least one ground point within a 10m*10m field and must take additional point if topography change is greater than 0.5 m between adjacent points. The points should be both inside the water as well as at bank and ground surfaces. All the reading from field should be submitted in the Excel Spreadsheet form or as per requirement.
- From the topographic survey, generate contours for a reach of 1km.
- Interpolation for contours should comply the actual site conditions and accurately reflect the changes in slope and ground configuration. The surface model should be prepared of adequate quality to produce 0.5m contour interval. Using these spot points and contours, DEM must be produced and submitted.
- The profile and cross-section will be carried out independently to topographic surveys at an interval but not limited to 50m both at 0.5 km u/s and 0.5 km d/s of gauging site (with at least an interval of 50 m, depending upon layout & topography, interval can be shorter for sudden change in cross-section). Also the longitudinal survey must be carried out along the river path at an interval of at least 25m as far as possible. All the cross section and profile of the river must show the river bed level, existing water level, high flood level mark and bank top levels. The plotted profile and cross section must be submitted in the form of Cad or Equivalent soft copy and hard copies along with data in excel spreadsheet.
- Prepare a site plan of stream gauging station showing staff gauges site, cable way site, discharge measurement site, survey section, bridges and other important features. The topographic feature and cross section must be plotted in scale of 1: 1000 on A3 size sheets. The plan of the survey area must be in UTM with grid ticks placed at 125mm intervals shown at top and right edge of each map sheet.
- The two set of discharge must be measured at each gauging site and it must be within 10% difference. Also, the discharge must be measured indirectly by Slope Area Method for three section (u/s to middle, middle to d/s and u/s to d/s for each reach of about 100m) and the high flow should be computed by averaging the three values.
- Compute Manning's n from the measured discharges.
- Compute Cross-section area (A), wetted perimeter (P), Hydraulic radius (R), for every 0.2 m water level rise up to Highest Flood Level (HFL).
- Prepare a plot of water level (H) vs. $AR^{2/3}$ and H vs. A, P.

- Compute Peak Flood Discharge of 2016 using slope-area method from existing flood mark and corresponding high flow area as well as identification of frequency of that flood.
- Extrapolate the 100, 500 and 1000 years return period floods analytically and compute its corresponding stage in reference to gauge datum and Bench mark (masl) separately.
- Take photographs of the survey work, vulnerable areas and stations showing location, staff gauges, gauge house, cable way, river bed and other features.
- Prepare the GIS map of the each basin showing total area(km²) and area(km²) up to gauging site using ASTRE DEM or SRTM data.
- Prepare and submit reports.

Methodology

The methodology mainly includes the following but not limited to:

- Bench Mark Fixing
- Topographic survey
- Cross-section and longitudinal section survey
- Discharge measurement (Both direct and slope area method)
- Application of Geographic Information System (GIS) and AutoCAD, DTM
- Photograph, Drawing, Reporting and Presentation

Nevertheless, the consultant could add other tasks as deemed necessary in order to complete the works as required.

Human Resources / Schedule

The following technical experts and assistants are envisaged for the completion of the study:

- Team Leader (Sr. Hydrologist/Senior Engineer) - 1 person
- Engineer/ Sr. Surveyor - 1 person
- Hydrologist - 1 person
- GIS Specialist / Cartographer - 1 person
- Autocad Expert - 1 person
- Sub Engineer / Surveyor/Asst. Hydrologist - 2 person
- Office Assistant - 1 person

Along with the bio-data of the experts; the consultant should also submit the following declaration document from the experts:

- a) Nature of their involvement in this project (part time or full time)
- b) Letter of commitment of work for this project (duly signed)

Work Schedule

The duration of the study is three months, effective from date of consultancy agreement.

Schedule of Implementation

The time schedule for the completion of the report is as follows:

S.N.	Description	No. of Reports to be Submitted	Due date for submission after effective date of contract agreement
1.	Inception Report	3 Copies with 1 CD	30 days after the date of agreement

2.	Field Report	3 Copies with all field data in excel sheets in 1 CD	60 days after the date of agreement
3.	Draft Report	3 Copies with 1 CD	80 days after the date of agreement
4.	Final Report	5 Copies with CD including all drawings, DEM, Contours in model format	90 days after the date of agreement

Schedule of Payment

Schedule of Payment for this work will be as follows:

S.N.	Description	% of Contract Amount
1.	Submission and approval of Inception Report	20 %
2.	Submission and approval of Field Report	30 %
3.	Submission and approval of Draft Report	30%
4.	Submission and approval of Final Report	20%

Output

Three copies of the Inception Report should be prepared and submitted to DHM no later than 30 days after signing the contract agreement. The consultant shall present the report to DHM and other invited professionals for discussion. This report shall contain the finalized work program and a general approach and methodology that the Consultant proposes to conduct the study. DHM and the invited experts will review the Inception Reports submitted by the consultant and will send its comments if any to the consultant. The consultant shall resubmit two copies of revised Inception Report in soft and hard after incorporating the comments.

Three copies of the Field Report should be prepared and submitted to DHM no later than 60 days after signing the contract agreement. The consultant shall present the report to DHM and other invited professionals for discussion. This report shall contain the detail field work program conducted with all the details and methodology that the Consultant conducted during the field visit. DHM and the invited professionals will review the Field Reports submitted by the consultant and will send its comments if any to the consultant. The consultant must submit the raw data collected/ surveyed in the field in the form of excel spreadsheet.

Three copies of Draft Final Report should be prepared and submitted to DHM no later than 80 days after signing the contract agreement. The consultant shall present the report to DHM and other invited professionals for discussion. DHM and the invited experts will review the Draft Reports submitted by the consultant and will send its comments to the consultant.

Five Copies of Final Report and electronic version (CD) shall be prepared and submitted to DHM no later than 90 days after signing the contract agreement. The report of study for the project shall be prepared comprising all related information as formulated in the scope of work. The soft copy must include all the cross section, L-Section, contours, DEM, discharge calculation sheets as well. The consultant should prepare and submit report by incorporating all the comments and suggestions from DHM and the professionals.

Presentation and Evaluation

All the four reports must be presented to a panel of hydrologists (Technical Evaluation Team) and other officers from DHM including account section and invited experts. The technical evaluation team will be headed by Deputy Director General of the Hydrology Division and other members will be Senior Divisional Hydrologists and Hydrologist Engineers from the department. If necessary, external experts will also be called by DHM during presentation and evaluation meetings. The team leader and other experts(as far as possible) involved in this project have to attend all presentations from the consultant.