

**INVITATION OF BIDS FOR ENVIRONMENTAL MONITORING AND LABORATORY TESTING
CONSULTANCY SERVICES FOR WATER RESOURCES DEVELOPMENT IN CHOLISTAN**

Terms of Reference (TOR) of Environmental Monitoring, Sampling & Testing

1. INTRODUCTION

NESPAK is conducting Environmental Impact Assessment (EIA) as part of Consultancy Services for Water Resources Development in Cholistan. To support the EIA and establish baseline environmental conditions, comprehensive environmental monitoring is required, in accordance with Punjab Environmental Quality Standards (PEQS), 2016 from a Punjab-EP&CCD approved laboratory.

This Terms of Reference (TOR) outlines the scope and requirements for the environmental monitoring to be conducted for the project.

2. SCOPE OF WORK

To evaluate the existing physical environmental condition of the project area, a Punjab EP&CCD-certified laboratory is required to undertake environmental monitoring of ambient air and background noise and sampling and testing of surface water, wastewater, and drinking/ground water at the project sites.

The scope of work consists of but is not limited to the following activities/requirements:

- a) National and International accepted code of practices will be used for surface/waste water and drinking/ground water sampling (collection method, precautions/instructions for sampler, sample preservation before delivered to laboratory for analysis etc.).
- b) Air and noise quality assessment will be carried out to analyze the existing ambient air quality and noise levels in the project area.
- c) Sampling and analysis of surface water quality and wastewater.
- d) Sampling and analysis of drinking/ground water.

The laboratory will undertake the required testing/monitoring for the following parameters and number of samples.

Sr. No.	Parameters	Sampling Duration/Type	Quantity
1	Drinking/Ground Water Quality (As per PEQS) Color, pH, Turbidity, Total Hardness, Total Dissolved Solid (TDS), Aluminum (Al), Antimony (Sb), Barium (Ba), Boron (B), Cadmium (Cd), Chloride (Cl ⁻), Chromium (Cr), Copper (Cu), Cyanide (CN), Fluoride (F), Lead (Pb), Manganese (Mn), Mercury (Hg), Nickel (Ni), Nitrate (NO ₃ ⁻), Nitrite (NO ₂ ⁻), Selenium (Se), Residual Chlorine, Odor, Taste, Arsenic (As), Zinc (Zn ²⁺), Pesticides, Phenols (Total Phenolic Compounds), Total Coli forms and Fecal Coli forms (E.Coli).	Grab Sampling	15
2	Wastewater Temperature, pH, COD, BOD ₅ , Total	Grab Sampling	07

Sr. No.	Parameters	Sampling Duration/Type	Quantity
	Quality (As per PEQS) Dissolved Solids (TDS), Total Suspended Solids (TSS), Chloride, Fluoride (F-), Oil & grease, Phenols (Total Phenolic Compounds), Cyanide (CN-), Anionic Detergents as MBAS, Sulfate (SO ₄ ⁻²), Sulfide (S), Ammonia NH ₃ , Cadmium (Cd), Chromium (Cr) as Hexavalent & Trivalent, Copper (Cu), Lead (Pb), Nickel (Ni), Zinc (Zn), Iron (Fe), Manganese (Mn), Selenium (Se), Silver (Ag), Arsenic (As), Barium (Ba), Boron (B), Mercury (Hg), Chlorine (Cl), Total Toxic Metals and Pesticides.		
3	Surface Water Quality (As per PEQS) Temperature, pH, COD, BOD ₅ , Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Chloride, Fluoride (F-), Oil & grease, Phenols (Total Phenolic Compounds), Cyanide (CN-), Anionic Detergents as MBAS, Sulfate (SO ₄ ⁻²), Sulfide (S), Ammonia NH ₃ , Cadmium (Cd), Chromium (Cr) as Hexavalent & Trivalent, Copper (Cu), Lead (Pb), Nickel (Ni), Zinc (Zn), Iron (Fe), Manganese (Mn), Selenium (Se), Silver (Ag), Arsenic (As), Barium (Ba), Boron (B), Mercury (Hg), Chlorine (Cl), Total Toxic Metals and Pesticides.	Grab Sampling	08
4	Ambient Air Quality Monitoring (As per PEQS)		
	NO, NO ₂ , SO ₂ , Lead, SPM, PM _{2.5} , PM ₁₀	Averaging Period: 24 Hours	15
	CO	Averaging Period: 1 hour & 8 hours	
	O ₃	Averaging Period: 1 hour	
5	Noise (As per PEQS) Continuous 24-hour monitoring of Noise - dB(A) L _{eq}	Day and Night Time	15

- e) Sampling methodology shall be as per National Environmental Quality Standards (NEQS) Environmental Sample Rules, 2001 Statuary Notification S.R.O.527 (1)/2001 and USEPA.
- f) Monitoring methodology for all the parameters will be in accordance with the requirements of Punjab Environmental Quality Standards (PEQS), Notification No. SO (G)/EPD/7-26/2013 dated 5.8.2016 and USEPA.
- g) Analytical procedures shall be according to USEPA methods. Results of analysis will be compared with PEQS 2016 limits and international standards. However, where these standards do not provide limits for certain parameters, other appropriate international standards will be used for comparison.
- h) Use precise, modern, and calibrated equipment for air, noise, surface/waste, and drinking/ground water sampling and testing.

- i) The laboratory will provide comprehensive report on air, noise, surface/waste and drinking/ground water (as applicable), which will include, but not limited to the following:
 - I. General
 - II. Location with coordinates, maps, details pictorial evidence and Sampling methodology.
 - III. Analysis of results with seasonal variation, remarks/comments/justification for anomaly (if any) and mitigation
- j) The preservation and transportation of sampling as per applicable standards/procedures shall be responsibility of the laboratory.
- k) Monitoring should preferably be conducted under typical weather conditions, avoiding extreme conditions like rain, to ensure accurate and consistent results.
- l) Unit rates quoted for testing/monitoring shall include all taxes and other costs including the cost of collection, preservation and transportation of samples to the laboratory.
- m) The bid shall be inclusive of all expenses, such as boarding, lodging, travel, generator usage, and transportation. No additional charges shall be claimed from the Employer.
- n) The Employer has the authority to direct the laboratory to repeat the sampling/monitoring if the results were found misleading.
- o) The quantity of sampling and monitoring may increase or decrease and the payment shall be based on actual quantity of sample/monitoring points.
- p) The laboratory must provide valid calibration certificates for field equipment at the site.
- q) The mobilization time will be within three (03) days after award of work.
- r) Payment of the entire amount shall be made, upon submission of an invoice and Monitoring Report after 100 % completion of work and receipt of its fee from Client.
- s) The Employer has the authority to supervise the field activities of the laboratory.
- t) Validity of the bid should be ninety (90) days from the date of opening.
- u) NESPAK will not be responsible for the security arrangements (if required during field work)

3. MONITORING REPORT

A comprehensive report on the baseline of air, noise, surface water, wastewater, and drinking/ground water quality will be prepared and submitted by the monitoring laboratory within ten (10) working days after completion of monitoring.

The reports shall outline the sampling and monitoring methodology for air, noise, surface water, wastewater, and drinking/ground water quality, including date, GPS coordinates, complete data logs, and analysis compared with PEQS 2016 and international standards. The report shall also include discussion on results including anomalies (if any) with justifications, a photolog, supporting annexes, and correlations with any weather extremes observed. Conclusions and recommendations will be provided as part of the report.

4. QUALIFICATION CRITERIA

Qualification will be based on the criteria given in the following paras regarding the Applicant's experience, personnel and equipment capabilities, financial position and litigation history, as demonstrated by the Applicant's responses in the Forms attached as Annex-A to this Document. The Employer reserves the right to waive minor deviations, if these do not materially affect the capability of an Applicant to perform the contract by the Applicant.

Experience and resources of the Company intended to be employed as sub-contractor shall not be considered in determining the Applicant's compliance with the qualifying criteria. However, for joint venture, collective experience, resources and financial soundness of all partners shall be considered.

a. MANDATORY QUALIFICATION CRITERIA

- FBR and PRA certificates showing the active tax payer status of the Laboratory/Firm;
- The Laboratories with maximum approved parameters of testing will be preferred;
- Technical details of the equipment along with specification and calibration certificates; and
- Valid Punjab EP&CCD Certificates for the subject activity along with annexures and/or Latest Application of renewal and application receiving/response of Punjab-EP&CCD (not more than six months old), in case of expired validity for the subject activity.

b. GENERAL INFORMATION

The Applicant shall provide general information of their Laboratory/Firm as per the format specified in the Application Form A-1 attached in Annex-A.

c. EXPERIENCE OF THE FIRM

The Applicant shall meet the following minimum criteria:

- 1) Successful experience as a Laboratory/Firm in the execution of at least five (5) projects involving environmental monitoring of ambient air and noise level and sampling and testing of surface water, wastewater and drinking/ground water within the last five (05) years in Punjab. This experience should specifically be of environmental monitoring and sampling and testing of similar nature projects. The Applicant will supply information as per the format specified in the Application Form A-2 attached in Annex-A.

d. PERSONNEL CAPABILITIES

The Applicant must have in his employment, suitably qualified and relevant experience personnel to fulfill the positions tabulated below. The Applicant will supply information as per the format specified in the Application Form A-3 attached in Annex-A.

Sr. No.	Position	Qualification*	No.	Minimum Relevant Experience (Years)
1	Air & Noise Quality Expert	Bachelor/Master's Degree in Environmental Sciences/ Environmental Management with experience of conducting air quality and noise level monitoring and assessments.	01	07
2	Water Quality Expert	Bachelor/Master's Degree in Environmental Sciences/ Chemical Engineering /	02	07

Sr. No.	Position	Qualification*	No.	Minimum Relevant Experience (Years)
		Chemistry with experience of conducting water quality sampling, testing and analysis.		
3	HSE Supervisor	HSE Certification course	01	03

e. FINANCIAL CAPABILITIES

The Applicant shall meet the following minimum criteria:

- 1) Average annual turnover which is also termed as income from contracting for procurement of environmental monitoring and assessment and is defined as billing for works completed during the last three (3) years of at least Rs. 3.0 million or the said figure has been achieved in any year during the last three (3) years.

The Applicant will supply annual turnover information as per the format specified in the Application Form A-4 attached in Annex-A.

f. LITIGATION HISTORY

The Applicant should provide accurate information on any litigation or arbitration resulting from Contracts completed or under execution over the last three (03) years. The Applicant will supply information as per the format specified in the Application Form A-5 attached in Annex-A. A consistent/ overwhelming history of litigation against the Applicant may result in rejection of the application. In case an Applicant claims Nil litigation, he shall submit the same statement on the Affidavit of No Litigation and/or not being blacklisted by any authority.

g. APPLICATION OF HEALTH, SAFETY AND ENVIRONMENTAL STANDARDS

The Applicant should provide the HSE Policies and supporting documentary evidence for the following:

- i) First Aid Box
- ii) Personnel Protective Equipment (PPEs)
- iii) Health, Safety and Environmental (HSE) Policies
- iv) HSE staff

The Applicant will supply information as per the format specified in the Application Form A-6 attached in Annex-A.

The bidding documents shall follow a compliance-based evaluation criterion, ensuring adherence to all regulatory and technical requirements for qualification.

Annex-A: Technical Forms

General Information

All individual Applicants applying for qualification are requested to complete the information in this form.

1.	Name of Firm	
2.	Head Office Address	
3.	Telephone	Contact Person: Name: Title: Cell No.
4.	Fax	E-mail
5.	Place of Incorporation/Registration Certificates of the firm*	Year of incorporation/registration

*** Registration certificates must include:**

- Valid registration with Federal Board of Revenue (FBR)
- Valid registration with concerned Provincial Revenue Authority (PRA)
- Proof of active taxpayer of FBR & PRA

Financial Capabilities

Name of Applicant: _____

Year	Annual Turnover (in PKR)
2023-2024	
2022 – 2023	
2021 – 2022	
2020 – 2021	

Annex-B: Financial Form

Summary of Cost

Sr. No	Parameters	Sampling Duration/Type	Quantity	Rate (PKR)	Total (PKR)	
1	Drinking/ Ground Water Quality (As per PEQS)	Color, pH, Turbidity, Total Hardness, Total Dissolved Solid (TDS), Aluminum (Al), Antimony (Sb), Barium (Ba), Boron (B), Cadmium (Cd), Chloride (Cl), Chromium (Cr), Copper (Cu), Cyanide (CN), Fluoride (F), Lead (Pb), Manganese (Mn), Mercury (Hg), Nickel (Ni), Nitrate (NO ₃ ⁻), Nitrite (NO ₂), Selenium (Se), Residual Chlorine, Odor, Taste, Arsenic (As), Zinc (Zn ²⁺), Pesticides, Phenols (Total Phenolic Compounds), Total Coli forms and Fecal Coli forms (E.Coli).	Grab Sampling	15		
2	Wastewater Quality (As per PEQS)	Temperature, pH, COD, BOD ₅ , Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Chloride, Fluoride (F-), Oil & grease, Phenols (Total Phenolic Compounds), Cyanide (CN-), Anionic Detergents as MBAS, Sulfate (SO ₄ ⁻²), Sulfide (S), Ammonia NH ₃ , Cadmium (Cd), Chromium (Cr) as Hexavalent & Trivalent, Copper (Cu), Lead (Pb), Nickel (Ni), Zinc (Zn), Iron (Fe), Manganese (Mn), Selenium (Se), Silver (Ag), Arsenic (As), Barium (Ba), Boron (B), Mercury		07		

Sr. No	Parameters	Sampling Duration/Type	Quantity	Rate (PKR)	Total (PKR)
	(Hg), Chlorine (Cl), Total Toxic Metals and Pesticides.				
3	Surface water Quality (As per PEQS) Temperature, pH, COD, BOD ₅ , Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Chloride, Fluoride (F-), Oil & grease, Phenols (Total Phenolic Compounds), Cyanide (CN-), Anionic Detergents as MBAS, Sulfate (SO ₄ ⁻²), Sulfide (S), Ammonia NH ₃ , Cadmium (Cd), Chromium (Cr) as Hexavalent & Trivalent, Copper (Cu), Lead (Pb), Nickel (Ni), Zinc (Zn), Iron (Fe), Manganese (Mn), Selenium (Se), Silver (Ag), Arsenic (As), Barium (Ba), Boron (B), Mercury (Hg), Chlorine (Cl), Total Toxic Metals and Pesticides.	Grab Sampling	08		
3	Ambient Air Quality Monitoring (As per PEQS)	NO, NO ₂ , SO ₂ , Lead, SPM, PM _{2.5} , PM ₁₀	Averaging Period: 24 Hours	15	
		CO	Averaging Period: 1 hour & 8 hours		
		O ₃	Averaging Period: 1 hour		
4	Noise (As per PEQS) Continuous 24-hour monitoring of Noise - dB(A) L _{eq}	Day and Night Time	15		
5	Other Expenses (e.g., Mobilization/Generator Charges) =				
6	All applicable taxes as imposed by the Provincial Government or GST =				
7	Grand Total =				