

**DRAFT TERMS OF REFERENCE
FOR
CM'S DEVELOPMENT PACKAGE FOR FAISALABAD WATER
SUPPLY, SEWERAGE AND DRAINAGE FACILITIES**

1. BACKGROUND.

Faisalabad is the third largest city of Punjab with an estimated population of 3.4 million with growth rate of 3.70% and is a hub of industrial activities in the country. The city is located almost on a flat terrain (0.05% slope of alluvial plain). The city has grown rapidly to the present population of about 3.4 million persons, but the environmental infrastructure development, including capacity of existing water supply, sewerage network and machinery is lagging. Rakh Branch Canal passing through the middle of the city, divides it into two distinct zones; eastern and western. Water and Sanitation Agency, commonly known as WASA, subsidiary of Faisalabad Development Authority, (FDA) was established on April 23, 1978 under the Development of Cities Act 1976 with a view to providing and catering for the services with regard to Water Supply, Sewerage and Drainage. The WASA Faisalabad is administratively aligned to HUD & PHED of the Government of Punjab. Presently, total service area of WASA Faisalabad is 225 sq.km with total registered consumers for water & sewerage being 2,60,000. It is estimated that WASA provides about 72% of the city with sewerage services and about 70% with water services.

A very limited quantity of potable water is available as seepage from the canal. Surface Water Treatment Plants have been used to provide treated canal water to the city for a limited quantity. Major supply (90%) is derived from the tube wells installed in Chenab Well-field and Jhang Branch Canal Well Field. WASA-F has implemented many projects to meet the gap between supply and demand in Faisalabad; the requirement of water has still increased beyond the supply capacity in 2021. Similarly, the existing sewerage system was laid many decades back. During this period, there has been immense population growth resulting in an increase in sewage flow, making the system deficient for the present population as well as increase in flooding in monsoon due to poor drainage system. Further, the laid system has outlived its operational life and there are frequent maintenance problems in the sewerage and drainage system.

Currently, WASA Faisalabad is facing financial crunch due to its frozen tariff since 2005 and a huge increase in rates of electricity, POL etc. during this period. In this regard a



summary for bailout package was forwarded to Chief Minister Punjab with request for assistance from Government of the Punjab.

Under such situation, Chief Minister of Punjab approved a development package for Faisalabad on his visit to the city on 25/08/2020 for extension/rehabilitation of water supply, sewerage and drainage system. Consequently, different schemes have been proposed by WASA-F for improvement of the existing system in different areas of the city including urban flood mitigation and provision of machinery for the disposal stations to overcome the existing sewerage/drainage issues of the city.

WASA, Faisalabad intends to hire services of suitable consulting firm on Quality and Cost Based Selection Method for preparation of Engineering design, design vetting, proposing innovative methodology for execution of work for least public inconvenience, suggestions for use of improved construction materials/construction techniques and resident supervision, etc. *(weightage of quality and cost will be eighty percent & twenty percent respectively).*

2. OBJECTIVES.

The objectives of the consultancy are:

- ❖ Improvement in existing water supply, sewerage and drainage network to cover supply-demand gap of clean water, to avoid unhygienic environmental problems in the city and to cater inundation in low lying areas
- ❖ Provision of O&M machinery for improvement in the services

3. SCOPE OF WORK / DUTIES AND RESPONSIBILITIES OF THE CONSULTANT.

The scope of work covering the required services to be rendered by the consultant shall include, but not limited to the following: -

- 1) The survey work shall comprise necessary surveying, leveling and establishing benchmarks with respect to Geodetic Traversing Survey (GTS) bench mark, drawing cross-sections where required, and other related works required for preparation of design and construction of the water supply, sewerage and drainage system of the city.
- 2) Preparation of Topographic maps and Hydrogeological study of WASA service area and submit a detailed report.
- 3) Soil investigations required for the construction of the water supply, sewerage system and drains with all related laboratory testing.
- 4) Examine existing system/data, reconcile with Master Plan (2018) and discuss each component of projects with the client to recommend remedies



alterations, omissions and corrections with supporting documents before or during implementation/execution.

- 5) Study existing sewerage system of WASA and propose replacements where needed.
- 6) Prepare Engineering Design, vet the available design and submit GIS based maps for rehabilitation/new construction of sewer, water supply lines and drains (where required as per nature of job).
- 7) Prepare cost estimates (where required) of the project & bidding documents of contractors.
- 8) Responsible for design, cost estimation, construction and all related works of the buildings including in the project.
- 9) Develop android/web based IT application for all official correspondence relating to estimates, procurement, supervision, billing to contractors etc. The consultant will hand over this application (including server) to WASA after completion of the project.
- 10) Prepare the detailed schedule for entire implementation program and construction schedule of works to be communicated to the bidders. He shall also define main constraints to be taken into consideration by the Contractor during the works (traffic management issues, continuity of supply, etc.).
- 11) Assist WASA in Land related matters, such as its acquisition and resettlement of communities where it cannot be avoided.
- 12) Responsible for Resident Supervision of all works through qualified graduate engineers and other supervisory staff having sufficient experience in the relevant field. The consultant's team shall perform its duties with due diligence and efficiency in accordance with the best Engineering practices, standards and through technical/professional approach.
- 13) Supervise contractor's job and all work-related matters and shall ensure that measures taken by the contractor for safety of public, properties and staff working at site are adequate and in accordance to international standards/practices. If found any deficiency, the consultant shall advise to the contractor for remedial measures informing concerned officer of WASA.
- 14) Certify that the executed works are as per approved design, drawings, standard specifications, technically sanctioned estimates and within provision of contract agreement.
- 15) Examine the work schedule prepared by the contractor; recommend any change / modification, if required. Consultant shall also certify that the work executed at site is strictly according to the work schedule approved by the client. The consultant shall submit monthly inspection and progress reports to the concerned



- Engineer In charge. In case if the contractor lags behind the schedule, the consultant will point out and propose remedial measures to meet the target.
- 16) Certify that construction material brought by the contractor at site to be used in execution of work is strictly in accordance with standards & specifications laid down in the contract and laboratory test reports meet the standards.
 - 17) Ensure regulatory compliance with occupational health and safety laws and regulation at site by preparing HSE Plan for both construction and O&M phase.
 - 18) Visit the factories where material including pipes, machinery, tools, plants etc. is being manufactured and arrange testing of all materials before procurement and ensure that they are meeting the standard specifications.
 - 19) Supervise all field / laboratory tests of materials and works as per methods described in the specifications and will submit a copy of all field / laboratory test reports to the concerned officer of WASA. The field equipment required will be provided by the contractor whereas the consultant will arrange technician / supervisory staff to supervise the tests. For laboratory tests, sampling will be carried out by the consultant and laboratory fee will be paid by the contractor.
 - 20) Certify under his seal, the contractor's bills / payments, clearly indicating that the quality of work executed at site is in accordance to the specifications, design, drawings, technically sanctioned estimate and contract agreement within due time of submission of bill to the consultant. The consultant shall also certify the quantity of work executed at site and make recommendations regarding payment to the contractor along with Test Reports.
 - 21) Evaluate Operation & Maintenance plan of schemes submitted by the contractor.
 - 22) Keep record of daily inspection & tests reports and will hand over the same to the client on monthly basis.
 - 23) Assist the client for interpretation of Contract Documents particularly with respect to disputes with the contractor or other affected parties. Moreover, he shall evaluate and make recommendations to the client for actions to be taken against contractor's claims, disputes and time extensions.
 - 24) Take and submit photographs during execution of work.
 - 25) Scrutinize all specification of equipment/machinery and their procurement process.
 - 26) Prepare and submit as built drawings of schemes to WASA.



- 27) Design an electronic database for supervision of facilities (through SCADA) with consultation of client.
- 28) Work out the number of connections and estimated revenue to be generated as a result of this project.
- 29) Carry out detailed final inspection of the work along with Client's staff.
- 30) Recommend to the Engineer in charge for issuance of completion certificate stating that the work has been completed as per specifications, drawings, estimates and contract agreement.
- 31) Submit monthly and quarterly reports as required by the client/Engineer in-charge
- 32) Submit completion report and PC-IV of the Projects after completion of work.

4. **ADDITIONAL REQUIREMENTS FROM CONSULTANT.**

- i) **Delayed Submission:** - If project cost increases due to delays in supply of design, drawings by the consultant, the consultant shall be responsible for that and a penalty equal to 5% of contract value will be imposed @ 0.36% for each day delay up to max two weeks. Client shall have right to terminate the contract in case of delays more than two weeks.
- ii) **Repeated Design:**-In case there is any repetition in the design of some components of the work which has already been designed for any of the project of the client carried out by consultant, no payment will be made for that component of design work.
- iii) **Design/Drawings:** - The consultant will provide soft and hard copies of design and drawings to WASA, where required. Department has the right to get the design vetted from a third party and in case there is a variation of $\pm 5\%$, the consultant will be penalized by the same %age from the fee besides making required changes in design & drawings.
- iv) **Best Effort:** - The consultant shall furnish a certificate to the effect that design carried out by him is most efficient and economical.
- v) **Consultant's work is expected to result in:**
 - Good quality of construction in accordance with stipulated specifications.
 - Timely completion of work.

5. **TIME DURATION**



Time duration of the consultancy is 36 months (06 months for design and 30 months for resident supervision).

6. MAN-MONTHS OF THE STAFF

a) Design Phase		
Key Staff	No.	Man-Months
Team Leader	1	06 months
Dy. Team Leader	1	
Water Supply Expert	1	
Sewerage Expert	1	
Drainage Expert	1	
Senior Electro-Mechanical Engineer	1	
Procurement Specialist	1	
Non-Key Staff		
Design Engineer (Structure)	1	
Survey Expert	1	
IT Expert	1	
Auto CAD Operator	1	

b) Supervision Part		
Key Staff	No.	Individual Man-Months
Team Leader	1	12
Dy. Team Leader/ Resident Engineer (Civil)	1	30
Procurement Specialist	1	4
Non-Key Staff	No.	Individual Man-Months
Assistant Resident Engineer(Civil)	2	30
Assistant Resident Engineer (Electrical/ Mechanical/Mechatronics)	1	19
Site Inspectors	3	30
Material Inspector	1	30
Quantity Surveyor	1	15

- Additional staff will be arranged by the consultant at his own expense.
- No expert/staff should be more than 60 years old.
- The staff / team given in the technical proposal for construction supervision shall not be changed after the award of work without prior approval of DMD (Engg.), WASA.
- Team Leader, Deputy Team Leader, Procurement Specialist and Resident Engineer will

be same for design and supervision period.

7. QUALIFICATION & EXPERIENCE REQUIREMENT OF TEAM.

a) Design Phase			
Specialists	Qualification	Experience (Min.)	Experience
Team Leader	M.Sc. vil/ Environmental Engineering) (Ci	20 Years	To Co-ordinate and monitor the project and liaison with WASA. Must have experience of conducting preferably 5 projects of similar nature.
Dy. Team Leader	M.Sc. (Civil/Environmental Engineering) or equivalent	12 Years	To conduct site surveys, prepare design and cost estimate, billing, site issue etc. Having experience of completing preferably 2 similar design and 3 similar supervision Assignments
Water Supply Expert	B.Sc. in Civil Engineering Or equivalent degree	5Years	Having experience of completing Preferably 3 similar assignments.
Sewerage Expert	B.Sc. vil/ Environmental Engineering or equivalent degree Ci	5Years	Having experience of completing preferably 3 similar assignments.
Drainage Expert	B.Sc. in Civil / Environmental / Water Resources Engineering Or equivalent degree	5Years	Having experience of completing preferably 3 similar assignments.
Senior Electro-Mechanical Engineer	B.Sc. Mechanical / Mechatronics / Electrical Engineering or equivalent Degree	5Years	Having experience of completing preferably 3 similar assignments.
Procurement Specialist	M.Sc. (Business/Finance/or	8 Years	Having experience of completing preferably 5 similar assignments.

	equivalent) with background of B.Sc. (Engineering) preferably		
Design Engineer (Structure)	MSc.(Structural Engg.)	5 Years	Having experience of completing preferably 3 similar assignments.
Survey Expert	B.Sc.GIS/Social Sciences/Survey diploma or equivalent	5 Years	Having experience of completing preferably 3 similar assignments.
IT Expert	BSc(CS)/MS (IT) or Equivalent	5 Years	Having experience of completing Preferably 3 similar assignments.
AutoCAD Operator	DAE(Civil)/Intermediate with AutoCAD diploma Or equivalent	5 Years	Having experience of completing similar assignments.
b) Supervision Part			
Specialists	Qualification	Experience (Min.)	Experience
Team Leader	M.Sc. (Civil / Environmental Engineering) or Equivalent degree	20 Years	To Co-ordinate and monitor the project and liaison with WASA. Must have experience of conducting preferably 5 projects of similar nature
Deputy Team Leader/ Resident Engineer (Civil)	M.Sc. Civil/Environmental Engineering or equivalent	12 Years	To conduct site surveys, prepare design and cost estimate, billing, site issue etc. Having experience of completing preferably 2 similar design and 3 similar supervision assignments
Procurement specialist	M.Sc. (Business / Finance /or equivalent) with background of B.Sc. (Engineering)preferably	8 Years	Having experience of completing preferably 5 similar assignments.

Assistant Resident Engineer(Civil)	B.Sc. Civil Engineering	5 Years	Having experience of completing similar assignments.
Assistant Resident Engineer (Electrical / Mechanical / Mechatronics)	B.Sc. Mechanical / Electrical / Mechatronics Engineering	5 Years	Having experience of completing similar assignments.
Site Inspectors	DAE (Civil) or Equivalent	5 Years	Having experience of completing similar assignments.
Material Inspector	DAE (Civil) or Equivalent	5 Years	Having experience of completing similar assignments.
Quantity Surveyor	DAE (Civil) or Equivalent	5 Years	Having experience of completing similar assignments.
Auto CAD Operator	DAE (Civil)/Intermediate With AutoCAD diploma or equivalent	5 Years	Having experience of completing similar assignments.

8. DELIVERABLES/ REPORTING WITH TIMELINES

Sr. No.	Report / Document	Period	No. of Copies
1.	Site Survey Report and Geotechnical Investigations Report	15 days	10
2	Submission of preliminary design report (where required as per nature Of job)	15 days	10
3.	Submission of detailed Engineering Design, vetting of available design, specifications, drawings, cost estimation and GIS maps (where required as per nature of job)	2 months	10



4.	Review of design/cost/other related works as per amendments required at supervision stage.	Within 07 days	05
5	Submission of bidding documents of the contractors, QA&QC manuals and HSE plan (where required as Per nature of job)	15 days	10
Resident Supervision of Work(30-Months)			
6.	Progress Report including Presentation on multimedia	Monthly	10
7.	Progress Report including Presentation on multimedia	Quarterly	10
8.	As-built Drawings Hard and softcopy With co-ordinates.	On completion of project.	15
9.	Completion Report/PC-IV supported By requisite surveys and reports	On completion Of work	10
	Total	36-Months	-

o Payment mode of Design and supervision Phase will be lump sum on the basis of final scope of work.

8. WORKING LANGUAGE

The working language of the assignments, all reports and works prepared by the consultants will be in "English or Urdu as required".

9. ROLE OF CLIENT AGENCY

The client shall:

- Provide all necessary documents prepared by the Client or other consulting engineers appointed by the Client at no cost as needed to enable the consultants to perform their specified scope of work.
- Approve project plans, request changes, raise issues and risks, release payments, and accept (or decline) the deliverables of the project

10. PROFESSIONAL LIABILITY OF THE CONSULTANT

The consultant shall comply with the PPRA Rule-54 which states:

(1) The consultant selected and awarded a contract shall be liable for consequence of errors or omissions on the part of the consultant.



- (2) The extent of liability of the consultant shall form part of the contract and such liability shall not be less than remunerations nor it shall be more than twice the remunerations.
- (3) The procuring agency may demand insurance on part of the consultant to cover the liability of the consultant and necessary costs shall be borne by the consultant.
- (4) The consultant shall be held liable for all losses or damages suffered by the procuring agency on account of any misconduct by the consultant in performing the consulting services.

11. MISCELLANEOUS

- i) The presentations, as and when required during the whole period of the assignment will be made by the consultant on multimedia to the satisfaction of WASA and Govt. of Punjab.
- ii) One month prior to the expiry of the Maintenance Period of the work, the consultant shall carry out a Detailed Final Inspection of the work and submit a report to the Client pointing out the defects, if any, in the work.
- iii) Order, if required, to uncover the completed work for removal of the defective work and substitution with proper work.
- iv) Coordinate between contractors of different groups for levels, grades and alignment etc. of different infrastructure and services.
- v) The Client can increase or decrease the quantum of work without assigning any reason.
- vi) The consultant will adjust & depute staff as per pace of work during execution.

