

**GOVERNMENT OF KHYBER
PAKHTUNKHWA
IRRIGATION DEPARTMENT**



**TERMS OF REFERENCES (TORS)
For
CONSULTANCY SERVICE
For**

Remodeling of Upper Swat Canal System

**Detail Design, Design of Distribution Network, & Construction
Supervision of Rehabilitation /Improvement of Upper Swat Canal
System.**

MALAKAND IRRIGATION DIVISION MALAKAND

March 2022

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A. BACKGROUND:

The Upper Swat canal (USC) irrigation system commissioned in 1914 irrigates a large proportion of the fertile Peshawar Valley. The Upper Swat Canal (USC) being fed from Swat River at Amandara head works, was originally designed for a discharge of 2,420 ft³/sec to irrigate an area of 315,000 acres of Charsadda, Mardan, Swabi, Nowshera and parts of Malakand Agency plains. The canal, after traversing the narrow ridge of Malakand hills through the Benton Tunnel, eventually bifurcates at Dargai into two branches of Machai and Abazai Branches. Over time, a fine web of minor distributaries drew off from the main canal to increase the area under cultivation. Due to the capacity constraint of the tunnel section, the discharging capacity of the canal was restricted to 1,800 ft³/sec, hence, the cultivable command area (CCA) was reduced to 276,000 acres. A layout map of Swat River canals is presented below.

The rising population and changing cropping patterns warranted greater need for irrigation. To bridge the gap of water shortages, an auxiliary tunnel was designed and constructed for a discharge of 1,800 ft³/sec. As a result of the construction of this tunnel, the capacity of the Upper Swat Canal (USC) was also increased up to **3,531.50 ft³/sec**. Moreover, rehabilitation works at various RDs of USC, carried out under Swabi Salinity Control and Reclamation Project (Swabi SCARP Project) and Pehur High Level Canal (PHLC) Project, permitted more irrigation developments in the upper reaches of the canal. The agricultural production of Mardan, Swabi, Charsadda, Nowshera and Malakand areas is largely dependent upon the irrigation supplies from USC. The afore stated areas are among the best agricultural producers of cereals, cash crops and variety of fruits. The crops production of the region sugarcane, tobacco, wheat, maize etc, is the source of socio-economic development.

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i) Justification of the Study

When USC system was commissioned, the farmers in Mardan, Swabi, Charsadda, Nowshera and Malakand areas knew the fear of famine was well behind them, as the chilled emerald waters of the Swat River flowed into their lands. The century old, USC system maintained its integrity and promised irrigation supplies to the farmers over the decades.

B- OBJECTIVES

Objective of Upper Swat Canal System are as under:

- | | |
|---|----------------------|
| 1- TOTAL DISCHARGE OF UPPER SWAT CANAL SYSTEM. | 3657 CUSECS. |
| 2- TOTAL C.C.A. | 320000 ACRES. |
| 3- TOTAL CANAL PATROL ROADS | 700 KM. |

4- POWER STATIONS.

- i) DARGAI HYDRO POWER- 20 MW**
- ii) JABBAN HYDRO POWER-20 MW**
- iii) MALAKAND-III HYDRO POWER -81 MW**

5- BUILDINGS

INSPECTION HOUSES

- i) A.T WORKS**
- ii) AMANDARA HEAD WORKS**
- iii) HARICHAND**
- iv) KHARIKI**
- v) HATHIAN**
- vi) KATLANG**

B- RESIDENTIAL

- I) Staff Quarters at A.T Works**
- II) Staff Quarter at Amandara Head Works**
- III) Staff Colony at Malakand ,Dargai ,Katlang ,Hathian**

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C. SALIENT FEATURES OF UPPER SWAT CANAL SYSTEM:

SOURCE	SWAT RIVER.
OFF-TAKE POINT.	AMANDARA D/S CHAKDARABRIDGE.
YEAR OF COMMENCEMENT.	1907.
YEAR OF COMPLETION.	1914.
COMPLETION COST.	RS.20.8567 MILLIION.
AREA BENEFITED.	MALAKAND, MARDAN,SWABI,CHARSDDA, NOWSHERA & BUNER DISTRICTS.
ORIGINAL DISCHARGE	1800 CUSECS
REMODELLING OF U.S.C.	1993 (UNDER SWABI SCARP.
COST OF PROJECT.	RS.5359.26 MILLION.
REMODELLED DISCHARGE.	3657 CUSECS.
TOTAL C.C.A.	320000 ACRES.
TOTAL LENGTH.	981.00 KM
DESIGNED DUTY.	9 CUSECS PER 1000 ACRES.
NO'S OF DISTYS.	37NO'S.
NO'S OF MINORS.	73 NO'S.
CIVIL CHANNEL	10 NO'S. 30 KM LENGHT
POWER STATIONS.	2 NO'S.JABBAN & DARGAI , 20 MEGA EACH. Malakand III HPP 81 MW
Flow Irrigation Schemes.	5 No's.
Lift Irrigation Schemes.	13 No's
T/wells.	3 No's.

INVETRY OF HEAD WORKS.

A. A.T.Works.	Source	Swat River
1. Regulation Gates.	9 Nos	
2. Under Sluices Gate.		9 Nos
3. Left Spill Weir.		
4. Right Spill weir.		
5. Divide Wall.		
B. Amandara.		
1. Rest House.	1. Nos	
2. Head Works.	1. Nos	
3. Canal regulation Gates.	9 Nos	

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|----------------------------------|----------|
| 4. Under Sluices Gates. | 3 Nos |
| 5. Weir. | 1. Nos |
| C. Upper Swat canal (Main Line). | 19850 ft |
| D. Tunnel Bifurcator. | |
| 1. Benton Tunnel. | 11000 ft |
| 2. Auxiliary Tunnel. | 11000 ft |
| E. Benton Tunnel. | |
| 1. Jabon Power House. | 20 MW |
| 2. Pitched Channel. | |
| 3. Power Channel. | |
| 4. Dargai Power House. | |
| 5. Dargai Trifurcator. | |
| F. Auxiliary Tunnel. | |
| 1. Malakand III Power House. | 81 Mw |
| G. Colonies & Buildings | |
| 1. Officer Residences | |
| 2. Staff Residences | |
| 3. Hostels | |
| 4. Office Building | |
| 5. Masjid. | |
| 6. Shop & Dispensary | |

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S.NO	Item	Description
1.	General	
	Location	120 km from Peshawar through Mardan.
	Purpose	Rehabilitation and Improvement of Upper Swat Canal System.
12	Colony and Buildings	
	- Officer's Residences	1
	- Staff Residences	9
	- Hostel	1
	- Office building	1
	- Masjid	1
	- Shops and dispensary	1

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D. INSTRUCTION REGARDING SUBMISSION OF PROPOSALS:

1. Three copies of the technical and one copy of financial proposals in stapled/fixed binded form are required to be submitted. Proposal should be in a sealed envelop indicating original or copy on each enclosure, as appropriate.
2. The proposals shall be valid for a period of 180-days after the last date of submission, which is extendable on the expiry of above period through mutual agreement.
3. The technical and financial proposals of the consultants will be evaluated according to criteria for procurement of consultancy services of the Government of Khyber Pakhtunkhwa, applying weight-age formula of 80:20 for technical and financial proposals respectively.
4. Financial proposals of "Technically Qualified" consulting firm will be considered and opened by competent forum in presence of the competitive firms representatives. The contract agreement with successor firm will be governed by laws and regulations of the Govt. of Khyber Pakhtunkhwa. Financial proposal are also required to be submitted along with the Technical proposal in separate envelops.
5. Your technical proposal should include the following information as well.
 - i. Year of formation, year of registration of the firm, postal address, e-mail, telephone/fax numbers with name of partners/proprietor and head and branch offices.
 - ii. Registration Number and latest renewal certificate of Pakistan Engineering Council.
 - iii. National Tax No. (NTN) with copy of the certificate.
 - iv. List of Similar nature works completed by the firm during last 10 years with detail of year of start/completion, cost of consultancy services, scope of the work and actual services performed by the firm individually and / or in a joint venture with specific details to be given in annexure.
 - v. List of Similar nature works in hand with cost of consultancy services, scope of the work and actual services performed by the firm, date of start and expected date of completion individually and / or in a joint venture with specific details to be given in annexure.
 - vi. Only those similar projects will be consider for evaluation for which the scope of services is mentioned in the data sheet of the firm furnishes evidence to this effect.
 - vii. The experience of the firm includes project handled by the firm and not by the individual employees of the firm in their personal capacity.

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- viii. List of professional staff and CV's of the key experts (duly signed by them or by the authorized representative of the firm) who will be handling the assignment with names, qualifications, year of passing various degrees and post qualification practical experience.
 - ix. A comprehensive write-up about approach and methodology, proposed work plan and manning schedule of various experts on a bar chart showing man-months of each expert, their responsibility and total time schedule for completion of the assignment.
6. Any clarification on the TORs and EOI may be sought before last date of submission of the proposals.
 7. The employer/Procuring Entity reserves the right for any addition alteration or amendment in the TOR of the Project and continue or discontinue consultancy services.
 8. Consultants shall be responsible for payment of all kind of taxes (direct & indirect both), levies etc in vogue time to time by Govt. in respect of personnel and other activities with no liability to the client.
 9. Originally signed CVs of the proposed personnel having contact number and postal address along with availability certificate of the personnel for the Project shall be annexed in the Technical proposal.
 10. The consultants cost shall be inclusive of all kind of Taxes (direct & indirect both), levies etc.
 11. The consultants' financial bid/ proposal shall be deemed to cover expenses for each and every item of the scope of work/TORs. No payment shall be made for any item(s) mentioned in scope of work/TORs that the consultant have intentionally or unintentionally presented as conditional, missed or not included in their technical and financial proposal. The consultants shall have to perform the same at their own expenses.
 12. Payment for the personnel will be made as per actual time consumed on the Project but not in excess of the provision of man months made in the T.O.R. of consultancy.
 13. Payment to the consultants for the survey and Geo-technical investigation and other investigation (if required) will be made as per actual work done at the site on approved MRS.
 14. On the satisfactory performance of the services, the payment to the consultants shall be made as per actual inputs, while in case of incomplete assignment; the payment will be made for the work done in accordance with the breakup of the services submitted by the consultants and as determined by the Employer/Procuring Entity /Client.
 15. Security deposit and income tax/sale tax etc will be deducted as per the prevailing Government rules notified during currency of the project.

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16. The consultant shall establish complete Project Office at Malakand, Batkhela, Dargai/nearest to site.
17. Consultants shall appear in Project meetings and site visits and shall also make presentation if so directed by the department for which no TA/DA, boarding, lodging and claim for incidental charges etc, shall be entertained.
18. The consultant except with prior approval of the competent authority shall not sublet the study or any part thereof.
19. The consultants will provide undertaking for the effect that the key staff would not be employed on the other projects during the currency of this project. Any violation will liable the contract for termination.
20. If the consultant fails to complete any activity or part of activity the client reserve the right to execute the same at the consultant risk & cost.
21. If a project or part of project is dropped due to any reason, man months of the consultant key staff and logistics will be curtailed proportionally.
22. The cost of design review/design of distribution network, and construction supervision of Canal Structures and other components has been included jointly in the estimated man-months for Key, Non Key staff and other indirect cost. However for the review of design, payment will be made for Key Personnels only as required for three months period of the review stage.
23. The period of review of design and its validation on ground will be Three (3) months from award of consultancy.
24. Consultant will be responsible for security of their staff.
25. Consultant shall provide indemnity bond.
26. Employer/Procuring Entity /Engineer reserves the right to replace/withdraw/share vehicle, person and equipment from the consultant if required.
27. The Consultant will have to adjust given/estimated Man-months for entire period till completion.
28. TORs will be part of contract agreement.

E. EVALUATION CRITERIA OF PROPOSALS

Proposals of the consultancy firms will be evaluated as under

1. Technical Evaluation

S.No	Description	Maximum Marks
a	Qualification & Experience of Personnels	60
b	Experience of firm.	10
c	Work Plan/Manning Schedule & Methodology	30

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Total	100
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- Each page of the proposal must be numbered, sealed & signed by the authorized representative of firm
- Passing marks in each category will be 70%
- Proposals must be stapled binded. Ring binding will not be considered.
- Client reserves the right to make any change in TORs & marking criteria which is commonly applicable to all proposals
- Any clarification required should be brought in notice of the Client / Employer/Procuring Entity before submission of the proposal.
- Proposals shall be submitted in three copies (Marked as Original & Copy)
- Any mis-statement or false information provided in the technical or financial proposal will render the proposal as non-responsive and shall make the firm liable for punitive action under the relevant rules.

a. Qualification & Experience of Technical Key Personnel

S.No	Description	Marks	Criteria
1	Qualification	20	B.Sc. Eng. or M.Sc. (16 Years Education)=80%, MS or M.Phil.=90%, Ph.D=100%
2	Languages	05	Pashto =1.5 (R W S) Urdu =1.5 (R W S) English =2 (R W S)
3	Experience in construction of Canal Structure, just like Aqueducts, Syphons, Lining of Canals, Roads etc, Hydraulic structure, Tunnels and pressure pipe for water (i) General Experience (ii) Relevant Experience	7.5 15 7.5 30	Experience after completion of 16 Years education (as explained in para-M) Experience of particular discipline (as explained in para-M) Full marks for 5 Projects

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	(iii) Similar (DAM) Projects		
	Sub Total		
4	Experience of Local Environment	05	Khyber Pakhtunkhwa=04 Merged area=01
	Total	60	

- The proposals must contain salary details, last degree, PEC registration certificates of the key staff
- Each CV must be signed in Original by the Personnel & authorized representative of the firm.
- Personnel above the age of 70 will be ineligible

b. Experience of firm.

S.No	Description	Maximum Marks
1	Relevant/Specific Experience of Firm Completed/ In progress Canal Structures/Canal Lining Projects, tunnels and delivery / pressure pipe having dia \geq 1m in last 10 Years*	10
	Feasibility Study	= 10% marks,
	Detailed Design	= 20% Marks,
	Procurement	= 10% Marks,
	Construction supervision	= 60% Marks,
	Total	= 100% Marks,

- *Five (05) Projects completed/in hand Canals' category, one (01) Project of tunnel & two(02) projects of water delivery/ pressure pipe having dia \geq 1m.

Consultancy Services for Rehabilitation and Improvement of Upper Swat Canal System

- Projects with execution cost less than Rs. 500 million will not be considered.

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- Award & completion documents must be available in support of projects claimed as experience

c. Work Plan/Manning Schedule & Methodology

S.No	Description	Maximum Marks		
	Work Plan / Manning Schedule & Methodology	30		
		Technical approach and methodology (15)	Work Plan (5)	Organization and staffing (10)

2. Financial Evaluation. Lowest bidder will carry full marks, whereas the rest of bidder will be evaluated proportionate to lowest bidder.

F. UNDERTAKING

The Consultant will have to submit following undertaking on Judicial Stamp Paper.

It is hereby certified that the above are true statements based on facts and we take full responsibility for the correctness and accuracy of the information supplied herein to the best of our knowledge and belief. This is also to certify that the owner/partners/directors working solely for the consulting engineering profession. This is further to certify that we are independent consulting engineer and have no interest in any construction and conflicting commercial industrial and business activities which are likely to influence our professional independence and neutrality. We also undertake to fully abide by KPPRA act/rules & the Pakistan Engineering Council (Conduct and Practice of Consulting Engineers) Byelaws 1986 & registered with Khyber Pakhtunkhwa Revenue Authority and other Govt. Department.

G. SCOPE OF CONSULTANCY SERVICES

1. The Consultants will carry out a critical review of the detailed engineering design prior to commencement of works to identify anomalies or omissions that constitutes inconsistency in the design and completeness of works.
2. The consultant will review and validate on ground, the detailed engineering design including the design reports, design calculations and design drawings. The design review shall include but not limited to the following tasks:

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- i.** Carry out additional geo-technical investigation (if required with approval of the client) at Canals site and appurtenant structures, Residential colonies/Buildings, Solar Power system for residential colony, water treatment plant and Distribution network.
- ii.** Review design and ensure Seismic criteria for resistance against earthquake on Canals and all appurtenant structures shall be applied in the design.
- iii.** Review and ensure that the design parameters, calculation, location and layout of hydraulic and other engineering structures on the basis of hydrology report, geotechnical investigations, soil analysis, drainage pattern and site conditions , ensuring that safe and cost effective designs are adopted.
- iv.** Review existing soil reports provided by the Employer/Procuring Entity and suggest any additional testing, if required.
- v.** Review of Environmental study & will be responsible for obtaining required Certificate from Environment Protection Agency (EPA).
- Vi.** In case of any change in design of any component as a result of review, the consultant will re-design the same as per requirement along with full justification within review period of Three Months along with its cost effect on the Project cost.
- 3.** Review of Design documents/Drawings for any omission / correction etc before start of construction activities.
- 4.** Supervise construction of the project in the capacity of Engineers Representative, to ensure that the project including all components are being constructed satisfactorily in accordance with approved drawing design specifications and required quality. In case of any variation a detail report duly supported with document, laboratory tests be submitted to the Client/Employer/Procuring Entity , through the Engineer prior to its execution without affecting the other construction in progress.
- 5.** Assist the employer/Procuring Entity in Tendering Process/Bid Evaluation.
- 6.** Scrutinize and assist the Employer/Procuring Entity in approval of the Contractor's work schedule.
- 7.** Review and up-date Contractor's critical path analysis, if necessary.
- 8.** Submission of Revised Construction Drawings in accordance with actual site conditions including detail survey for project component/additional project component.
- 9.** Recommend to the client the source of appropriate construction material, for approval.

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- 10.** To provide sufficient and appropriate technical key and non-key staff at site as per requirement or as directed by Client / Employer/Procuring Entity in the interest of work.
- 11.** Supervise and check the setting out of all component structures and general layout of the project.
- 12.** Provide instruction to the contractors necessary for proper execution of the work in accordance with Engineering of Technical specification.
- 13.** Coordinate between Contractor, Engineer and Employer/Procuring Entity (Client) to implement the project in accordance with the contract and to provide assistance to Employer/Procuring Entity (Client) /Engineer on all contractual design specification and construction matter.
- 14.** Initiation and Issuance of variation order for approval of the Engineer in consultation with Employer/Procuring Entity (Client) subsequently if required.
- 15.** Verification/checking of contractors measurement both quantitatively and qualitatively, statements of executed quantities for facilitating progressive payments to the contractor. The consultant's will perform the role of the "Representatives of the Engineers" of the project. Launch a comprehensive quality control program including detailed methodology for inspection, sampling and testing and confirm its adequacy in the field and ensure its satisfactory implementation).
- 16.** Consultants will be responsible for verification and certification of all payment certificates including interim Payment Certificates and Final Payment certificates of the contractor. The Consultants will be responsible for the work verified by them both qualitatively & quantitatively in the capacity of "ENGINEER REPRESENTATIVE" for approval of the Employer/Procuring Entity (Client)/Engineer.
- 17.** Furnish "Detail Cost Estimate" and make periodic updating of the cost of project along with reasons for increase/decrease of cost of individual items.
- 18.** Supervise the material testing & other relevant tests in contractor's field laboratory and keep the record of respective test reports.
- 19.** Provide adequate technical assistance, consultation and advice to the Client / Employer/Procuring Entity in matters that crop up during execution, may include redesigning and connected issues.
- 20.** Carry out dispute resolution, as per provisions in the conditions of contract.
- 21.** Assist the Employer/Procuring Entity (Client) in taking over the contract works and prepare punch list of items of work to be rectified by the Contractor during defect liability period.

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- 22.** Participation and Coordination in progress meeting convened as and where directed by the Client.
- 23.** Preparation of revised PC-I as and when required by the client.
- 24.** To submit duly verified as built drawings and prepare a Manual for Operation and Maintenance of the Project after completion.
- 25.** The consultants shall provide design assistance/supervision during the defect liability period and visit the project from time to time for pointing out any defect etc. the same shall be reported to the employer/Procuring Entity in the form of punch list and monitor its rectification.
- 26.** Respond to any query, complaints and observations relating to quality, quantity and specifications to monitoring and investigating agencies. In the event of contractual dispute which may result in legal action, adjudication or arbitration between the contractor and the employer/Procuring Entity , on the instruction from the employer/Procuring Entity , the Consultants will collect and prepare factual documentation which describes the circumstances of the dispute. If required the Consultants will attend hearings and provide all legal and other support to the Employer/Procuring Entity .
- 27.** Prepare and submit Monthly & quarterly annual Progress Report to the Client / Employer/Procuring Entity .
- 28.** Participation and Coordination in progress review meeting convened as and where directed by the Employer/Procuring Entity (Client)/Engineer.
- 29.** Provide adequate consultation and advice to Engineer and Employer/Procuring Entity (Client) on contractual issues/corrigendum (s).
- 30.** To prepare PC-IV of the project.
- 31.** Testing and commissioning of all the components of the project in accordance with the design and specifications.
- 32.** Deal with the claims of the contractor(s) for additional payment, as per procedures described in the conditions of contract.
- 33.** Design of Various Canal Structures /Canals Lining and Roads. To establish network of concrete (1:2:4) control points (15” x 15” top, 24” x 24” base and 3ft deep).
 - i. Detailed Engineering design of the Canals and Structure Design
 - ii. Design of solar power system for residential colony.
 - iii. Preparation of cost estimates and construction drawings,

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- iv. To prepare tender documents of the project including instruction to bidders, technical specifications, BOQ as well as detailed cost estimate for obtaining Technical Sanction.
- v. To prepare tender drawings with sufficient details to enable proper bidding by the contractors.
- vi. To prepare contract documents and construction drawings of the Project for execution of the work on site.

H. RESOURCES.

The client shall not provide any manpower / logistic support in terms of technical or non-technical support staff, surveys, geotechnical investigations, transportation and travelling, accommodation, office space, equipment, printing, courier and utilities etc. the consultants consider necessary for the project execution. The consultants will have to return all the equipments, vehicles purchased under the project after its completion. The key positions along with the estimated man-months, qualification and experience of the personnel are given in para J&M. Man-months for technical support (non- key) staff have also been proposed but the same shall not be considered in evaluation of technical proposal.

J. PROFESSIONALS/ KEY PERSONNELS REQUIRMENTS

Following are the key positions along with estimated man-months. Qualification and experience of the personnel are also given below. Man months for technical support (non-Key) staff have also been proposed but the same shall not be considered in evaluation of technical proposal.

i. Key Personals:

S.No	Position	Man Months	Billing Rate (Rs)	Total Amount
1	Project Manager/Team Leader	24		
2	Principal Hydrologist/Hydraulics Engineer	06		
3	Principal Structure Engineer	12		
4	Principal Contract Engineer/Specialist	06		
5	Principal Survey Engineer	24		
6	Principal Mechanical Engineer	06		

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9	Principal Environment Engineer/Environmentalist	06		
10	Resident Engineer (Civil) 2 Nos	48		

ii. Technical Support (Non Key) staff for Construction Supervision phase:

S.No	Position	Man Months	Billing Rate (Rs)	Total Amount
1	Assistant Resident Engineer (Civil) 2 Nos	48		
2	Assistant Resident Engineer (Mechanical)	12		
4	Junior Engineer (Civil) /Field Inspector/ Quantity Surveyor (2 Nos)	48		
5	Lab Technician (3)	72		
8	Surveyors (3 Nos)	36		
9	Survey Helpers (6 Nos)	72		
10	CAD(Revit) Operators (2 Nos)	48		
11	Office Manager	24		
12	Accountant	24		
13	Computer Operator	24		
14	Office boy/Cook/ Chowkidar (3 Nos)	72		
15	Driver (6 Nos)	144		

(The deployment of Key/Non Key staff will be in consultation with the Employer/Procuring Entity /Engineer as per actual site requirement.)

iii. Non Salary / Indirect Cost

S.No	Description	Unit	Quantity	Rate/Amount
1	Furnished Office & Camp Accommodation	Months	60	
2	Electricity, Water & Gas Charges	Months	60	
3	Stationary, Furniture & other office Supplies	LS		
4	Fax, Postage, Courier & Telephone Charges	Months	60	
5	Purchase & Registration/insurance (on the name of Irrigation Department) 04 No Jimny Jeeps & 04 No single Cab (4*4) Pick	LS	6	

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	up with half canopy, 04 No's Double Cab(4x4). (Vehicles will be returned to client on completion of services or as & when required by client)			
6	POL/Running & Maintenance of vehicles	Months	60	

K. DELIVERABLE AND TIMINGS

S.No	Documents	No. of Copies	Submission Time
1	Submission of Draft Agreement	5	Within seven days after award of consultancy
2	Submission & Execution of Final Agreement	5	Within 20 days after approval of draft agreement
3	Inception report for review of design/ design for Distribution Network, Solar Power System	5	After one Month
4	Final Report for review of Design.	As per requirement	End of 3 rd Month
5	Monthly Progress Report	5	Monthly
6	Draft Tender Documents including Tender Form, Specification, BOQ's and Tender Drawings.	As per requirement	4 th Month
8	Final Tender Documents including Tender Form, Specification, BOQ's and Tender Drawings.	As per requirement	5 th Month
9	Construction Drawings	5	As and when required
10	Completion Report as per built drawings	5	At the end the project
11	Original PC-I / Revised PC-I & PC-IV,	As per requirement of the client	As and when required
12	Operation Manual		

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13	Land Revenue Papers	As per requirement	As and when required
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L. MODE OF PAYMENT

The mode of payment for construction supervision will be as under.

The consultant shall be paid the cost of activities as per provision in the Contract Agreement for such project as per rules. 10% will be deducted by the Client/Employer/Procuring Entity each payment as Security Deposit.

M. QUALIFICATIONS AND EXPERIENCE OF CONSULTANT'S KEY PERSONNEL.

Consultants will assign adequately qualified key personnel to carry out the implementation of the Project as described in TOR, man-month inputs. The key personnel should possess the qualifications and experience as indicated against each position.

Project Manager/Team

- ❖ Should have at least a Bachelor Degree in Civil Engineering from a recognized university. Additional qualification will carry extra marks
- ❖ Should be able to lead the team of consultations and assist the Project Directorate in timely completion of the services with quality output.
- ❖ Overall experience should be 25 years with 10-years' experience of resident supervision & 05 years' experience of management/Team Leader for the Projects.

Principal Hydrologist/Hydraulic Engineer

- ❖ Should have Master degree in Hydrology/WRE/Hydraulic Engineering from recognized university.
- ❖ Post Master qualification in related discipline will be given additional weight age.
- ❖ He should have at least overall experience of 15-20 years with 05 years experience in exposure to the related activities.

Principal Environmental Engineer/Environmentalist.

- ❖ Should have Master degree in Environmental Engineering/Master in Environmental Science from recognized university.

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- ❖ Post Master qualification in related discipline will be given additional weight age.
- ❖ Should have at least overall experience of 15-20years with 05-years' experience in exposure to the related activities.

Principal Mechanical Engineer

- ❖ Should have Bachelor degree in Mechanical Engineering from recognized university.
- ❖ Should have at least overall experience of 15-20 years with 05-years' experience in exposure to the hydraulic design & water supply related activities.

Principal Structure Engineer

- ❖ Should have MS degree in Structure Engineering from recognized university.
- ❖ Post Master qualification in related discipline will be given additional weight age.
- ❖ Should have at least overall experience of 15-20 years with 05-years' experience in exposure to the hydraulic design & water supply related activities.

Principal Survey Engineer

- ❖ Should have Bachelor degree in Civil Engineering from recognized university.
- ❖ Should have at least overall experience of 15-20 years with 05-years' experience in Survey of Hydraulic structures/Dams.

Principal Contract Engineer

- ❖ Should have Bachelor degree in Civil Engineering from recognized university.
- ❖ Post Master qualification in related discipline will be given additional weight age.
- ❖ Should have at least overall 15-20 years experience in works contracts, Contractors Claims/Legal matters, bidding documents, contract agreement, evaluation of bids and schedule's items etc.

Resident Engineer (Civil)

- ❖ Should have Bachelor degree in Civil Engineering from recognized university.
- ❖ Post Master qualification in related discipline will be given additional weight age.
- ❖ Should have at least overall experience of 10-15 years with 10-years' experience in exposure to the hydraulic design & water supply related activities.

TORs For Upper Swat Canal System,Consultancy Services.

Assistant Resident Engineer (Civil)

- ❖ Should have Bachelor degree in Civil Engineering from recognized university.
- ❖ Post Master qualification in related discipline will be given additional weight age.

- ❖ Should have at least overall experience of 5-10 years with 10-years' experience in exposure to the hydraulic design & water supply related activities.

Mechanical Engineer/ARE Mechanical

- ❖ Should have Bachelor degree in Mechanical Engineering from recognized university.
- ❖ Post Master qualification in related discipline will be given additional weight age.
- ❖ Should have at least overall experience of 5 years with experience in exposure solar/filtration plant and Hydraulic structures related activities.

N. TENDER DRAWINGS / DOCUMENTS

The preparation of tender drawings/documents would involve:

- (i). Preparation of tender drawings with sufficient details for the purpose of national competitive bidding (NCB).
- (ii). Preparation of bill of quantities for all project works.
- (iii). Preparation of tender documents in line with PEC/KPPRA format, Government of KP.

The bidding documents shall cover the civil works of the Project and its components.

Sub Divisional Officer
Head Works Irrigation Sub Division
Malakand.

Executive Engineer
Malakand Irrigation Division ,
Malakand.