

## **PC-II**

# **Smart City Planning and Implementation (SCPI) Consulting Firm**

**For**

**PUNJAB INTERMEDIATE CITIES IMPROVEMENT INVESTMENT  
PROGRAM (PICIIP)**

**Asian Development Bank (ADB) & Government of Punjab Funded Program**

**(Estimated cost USD 1.5 Million)**

**2021-2023**

**Local Government & Community Development Department, Government of  
Punjab**

**June, 2021**

**GOVERNMENT OF PAKISTAN**  
**PLANNING COMMISSION**

**PC-II**

1.	Name of Project:	Smart City Planning and Implementation (SCPI) Consulting Firm for Punjab Intermediate Cities Improvement Investment Program (PICIIP)
2.	Administrative Authorities Responsible:-	
	i. Sponsoring Agency	Local Government & Community Development Department (LG&CDD), Government of the Punjab (GoPb)
	ii. Execution Agency	i. PMU PICIIP-LG&CDD ii. CIU Sialkot iii. CIU Sahiwal
3.	Central Ministry Concerned with:-	
	i. Sponsoring Agency	N.A
	ii. Execution Agency	N.A
4.	Details of Survey / Feasibility Study:-	
	a) General Description (of aims and objectives):	<p>Cities are the economic, social and innovative core of Pakistan. They generate most of the wealth and are home to about 40% of the country's population<sup>1</sup>. Pakistan's cities, particularly the intermediate cities<sup>2</sup>, are developing at a fast rate and this has led to the rapid expansion of the urban environment but in an uncoordinated, unplanned and unregulated manner. Water supply, wastewater collection and treatment, storm water drainage, and the urban road networks are increasingly unable to respond to population pressures and economic demands.</p> <p>The Government of Pakistan and Government of Punjab, in particular has realized the</p>

<sup>1</sup>Finance Division, Government of Pakistan: Pakistan Economic Survey 2015-16, Islamabad.

<sup>2</sup>The Urban Unit of Punjab stipulates that a large city is a city with population size between 1.9 to 9.0 million while an intermediate city is defined as a city with population size between 0.25 million to 1.9 million.

	<p>importance of making its cities, particularly the intermediate cities, more livable and has put the urban sector at the forefront of its national development strategy. Pakistan's Vision 2030<sup>3</sup> and Framework for Economic Growth<sup>4</sup> envisage livable cities as engines of national growth and centers of economic activity, culture, and knowledge. The framework also recognized the advantage of the local governments in managing the urban development on the ground, as they are closer to the beneficiary population with an informational advantage in identifying citizens' preferences as well as essential flexibilities to respond rapidly to evolving city's needs. Under these circumstances, the government amended its constitution to decentralize the role of urban services to the provincial governments<sup>5</sup>. In 2015, the Government requested ADB to process a new urban sector project covering key urban sector developments in the cities of Sahiwal and Sialkot. ADB approved the Project in September 2017.</p> <p>The Punjab Intermediate Cities Improvement Investment Program (PICIIP) will have following major objective and outputs:</p> <ul style="list-style-type: none"> <li>a) The Project is aligned with the following impact: living standards, health, and economy in Sialkot and Sahiwal improved.</li> <li>b) The Project will have the following outcome: access to quality urban services by the residents of Sialkot and Sahiwal cities improved.</li> <li>c) The prime objective of the Project is sustainable urban development through optimization of enhanced service</li> </ul>
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<sup>3</sup>Planning Commission, Government of Pakistan, 2007. *Pakistan in 21<sup>st</sup> Century, Vision 2030*, Islamabad.

<sup>4</sup>Planning Commission, Government of Pakistan, 2011. *Framework for Economic Growth*, Islamabad.

<sup>5</sup>The 18<sup>th</sup> Amendment to the Constitution of Pakistan, 2010. Islamabad.

delivery to 100% urban population living in urban area.

## **OUTPUTS**

- **Output 1: Water supply systems improved.** This will be achieved through installation/rehabilitation of 114 boreholes and tube wells, 22 water reservoirs, 20 water pumping stations, approximately 350 kilometers of water pipes, up to 15,000 metered customer connections, of which 1,400 will be pre-paid meters on a pilot basis, and IOT based Smart Water Management System.
- **Output 2: Sanitation systems improved.** This will be achieved through installation and rehabilitation of 18 sewage pumping stations, replacement of approximately 40 km of sewer pipes, provision of missing equipment for wastewater management, unblocking of local drains, and construction of a centralized wastewater treatment plant. Equipment will be procured for improved collection and segregation of solid wastes.
- **Output 3: Urban public spaces improved.** This will be achieved through rehabilitation of 11 parks, 7 km green belts, major streets, footpaths, riverbank paths, and 3 bus terminals, which serve as critical hubs for regional transport systems. Local shops, vendors, and companies will expand new business opportunities with the upgraded facilities.
- **Output 4: Institutional support and**

**capacity development.** This will be achieved through support to institutional reforms such as the establishment of urban service standards, enhancement of the customer service function, and development of new tariff structures. Various capacity development programs—including O&M of key urban services, urban policy and planning, financial management, and tariff policy—will also be delivered to relevant staff in the government and urban service companies. This output will promote behavior changes in hygiene practice and environment through partnership with youth groups and civil society organizations. It will also organize targeted public awareness campaigns.

With the introduction of ICTs and digital tools, Smart City has become a much-needed initiative in the context of urban and local governance. A smart city as a foundation of efficient local urban governance is an integrated system in which government and its social capital (citizens) interacts and gets benefitted, using technology-based efficient solutions. Smart city is a compressive framework, predominantly composed of ICTs to develop, deploy, and promote sustainable development practices to address growing urbanization challenges. A big part of this digital framework is essentially an intelligent network of connected objects and machines that transmit data using wireless technology and the cloud. The smart solutions also utilize Cloud-based IoT applications to receive, analyze, and manage data in real-time to help municipalities, enterprises, and citizens make better decisions that improve quality of life. The Government of Punjab, under the supervision of its Local Government & Community Development Department has

envisaged to utilize the emerging trends of Smart Solutions through the first of its kind Smart City Strategy.

Therefore, PICIIP under its output 4 has a specific initiative on using such smart solutions for efficient and resilient urban management. Under the project, The Smart City Initiative is based on two components. i)It includes Development of a high level long term Smart City Strategy and Roadmap (underway). The Smart City strategy will provide the overall vision, objectives, governance and institutional framework etc. The envisioned smart city strategy will cover 6 vertices including Smart Governance, Smart Environment, Smart Living, Smart Economy, Smart Mobility and Smart People. The strategy will indicate and outline Smart Solutions/projects to be implemented under each vertical in short, medium and long terms.

By hiring the services of a Smart City Planning & Implementation Consulting Firm, it is aimed that pilot Smart City solutions will be implemented in the cities of Sialkot and Sahiwal. A preliminary level need assessment, e-readiness and situation analysis is conducted for the cities of Sialkot and Sahiwal. Keeping in view the current priorities, resources, capacities and more importantly a citizen centric focus, pilot Smart City project will be aimed at **Establishment of Model Integrated Smart City Command & Control Centre (ISC4) for Sialkot & Sahiwal'** with gender mainstreaming ensured at all stages of the project cycle\_(Please refer to the Annex for the high level requirements and features on these envisaged smart solutions). It will include

- i) One Stop Smart Window Operation for MCs/Smart Citizens' Information and Facilitation Centers (**Smart**

		<p><b>Governance)</b></p> <ul style="list-style-type: none"> <li>● ii) Solid Waste Management Smart Monitoring System <b>(Smart Environment/Smart Governance)</b></li> <li>● iii) IOT based Smart Water Supply Management System <b>(Smart Environment)</b></li> <li>● iv) Air Quality Monitoring, Information &amp; Communication+ Disaster/Crisis Management cell especially urban flooding <b>(Smart Environment/Resilience)</b></li> </ul> <p>To implement this pilot phase of the Smart City Initiative, The Project (PICIIP) requires to recruit a Smart City Planning and Implementation consulting firm (SCPI) to design, develop and implement selected Smart City pilot projects in Sahiwal and Sialkot that include complete turnkey smart solutions deployment. The SCPI firm will be responsible for the entire project planning, management and business process re-engineering to implement Smart solution that will include but not limited to provision of feasibility study and situation analysis, Smart Solutions design &amp; investigations, procurement and contract management, implementation, budget and financial management, cost control, scheduling, risk management, public outreach, monitoring, auditing, reporting, and ensuring compliances and due diligences required for the project. SCPI firm will ensure gender mainstreaming at all levels of the Smart City projects planning, implementation, management and monitoring. SCPI firm will also ensure compliance with all mandatory environmental and social safeguard parameters set by the PMU.</p>
	<p><b>b) Consultancy Period</b></p>	<p>The contract will be spread over 24 months. The consulting firm will be recruited using quality-and-cost-based selection (80:20) with full technical proposal in accordance with ADB's <i>Guidelines on the Use of Consultants</i> (2013, as amended from time to time) on an</p>

		output-based contract. The Consultant is expected to be fielded from November 2021.		
	<b>c) Man Power Requirement</b>	<p>The Consultant shall provide, for the duration of the entire assignment, a team of international and national experts who are experienced in, (i) planning, designing, implementing and managing smart city solutions as indicated in the concept notes of the attached TORs (ii) providing the entire project management functions (iii) procurement, evaluation of bids and commissioning and supervision of any civil works required to establish Integrated Smart City Command and Control Centers in Sialkot and Sahiwal (Included in TORs, attached as Annexure A)</p> <p><b>Procurement Procedure</b></p> <p>Procurement Plan for the program will be in line with ADB Procurement Guidelines. Attached as Annexure C.</p>		
	d) Estimated Cost Local, Foreign Total.	<b>Million Dollars</b>		
		<b>Local</b>	<b>Foreign</b>	<b>Total</b>
		-	1.5	1.5
		Attached as Annexure B – Budget		
	e) Personnel required:	<b>National</b> <b>25</b>	<b>International</b> <b>8</b>	
	f) Mode of financing: (Give budget provision).	ADB Loan		
	g) Number of persons likely to be employed during implementation of Scheme.	33		
	h) Materials and parts required yearly after completion of project. (Local costs and Foreign costs).	ADB Member Countries		
5.	<b>Expected Major Outcome</b>	<p>The consultancy will have following major outcome;</p> <p><b>A. Establishment of Model Integrated Smart City Command &amp; Control Centre (ISC4) for Sialkot &amp; Sahiwal’.</b> This</p>		



outcome has the following 4 Sub Outcomes:

**A-1 One Stop Smart Window Operation for MCs/Smart Citizens' Information and Facilitation Centers (Smart Governance)**

**A-2. Solid Waste Management Smart Monitoring System (Smart Environment/Smart Governance)**

**A-3. IOT based Smart Water Supply Management System (Smart Environment)**

**A-4. Air Quality Monitoring, Information & Communication+ Disaster/Crisis Management cell especially urban flooding (Smart Environment/Resilience)**

To fulfill these outcomes, SCIP firm will be responsible for following 4 key outputs

**Output A: Project Planning and Management Function Delivered**

Task 1: Inception/Work Plan

Task 2: Diagnostic Study, Situation analysis & Stakeholder Consultations (Combined with Output B)

Task 3: Financial, Budget and Accounting Management

Task4: Procurement Management

Task 5: Project Coordination and Public Outreach

Task6: Development of PPMIS and Linkages of Smart City Solutions to Dashboards

**Output B: Smart City Solutions Planning and Design Completed**

Task 1: Feasibility Study and Surveys and Site Investigations

Task 2: Mapping As-Is Processes

Task 3: To-Be & Requirements Specifications

Task 4: Development of Smart Solutions (Functional requirements, Technical

		<p>Design &amp; Configurations, Technical validation, Defining configuration requirements and implementation modalities)</p> <p><b>Output C: Smart City Solutions Implementation Management delivered</b></p> <p>Task 1: Smart Solution Project Implementation Support</p> <p>Task2: Procurement, Installation/deployment, monitoring and commissioning of necessary hardware</p> <p>Task 3: Setting up Smart Solution test conditions and parameters</p> <p>Task 4: Pre-Live Quality Assurance and Testing Audit</p> <p>Task 5: UAT and Go-Live Report</p> <p><b>Output D: Capacity Building &amp; Institutionalization of Smart City Solutions Delivered</b></p> <p>Task 1: Capacity building of stakeholders on Smart City Solutions</p> <p>Task 2: Monitoring the O&amp;M</p> <p>The Attached TORs (ANANEX A) outlines detailed tasks and activities to deliver each of these outputs</p>
6.	<b>Submission/Outcomes from Consultant</b>	<p>Detailed timelines for Deliverables are included in the TORs. The summary of submissions from the SCPI firm includes:</p> <ul style="list-style-type: none"> <li>i. Inception Report</li> <li>ii. Situation Analysis &amp; Diagnostic Study</li> <li>iii. Financial and Revenue Plan including <ul style="list-style-type: none"> <li>• Detailed and complete financial and revenue model for each Smart City Project</li> <li>• Budget and costing model for each Smart City Project</li> <li>• Financial Management and Accounting</li> </ul> </li> </ul>

		<p style="text-align: center;">System</p> <p>iv. Procurement Management Plan/Document</p> <p>v. Communication and Coordination Mechanism including</p> <ul style="list-style-type: none"> <li>• PICIIP's Smart City Initiative's Communication and Public Outreach Strategy</li> <li>• Multi Stakeholder based Coordination Mechanism</li> </ul> <p>vi. Current Resource and Process Maps including</p> <ul style="list-style-type: none"> <li>• Separate 'As-is' maps of all departments, functions and processes to be converted in smart solutions</li> <li>• Consolidated 'As-is' maps consisting of all Smart City Projects in an integrated manner</li> </ul> <p>vii. BPR Output &amp; Business Process reengineering (BPR) report including</p> <ul style="list-style-type: none"> <li>• Separate 'To be' process maps of all departments, functions and processes to be converted in smart solutions</li> <li>• Consolidated 'To be' maps consisting of all Smart City Projects in an integrated manner (wherever required and possible)</li> <li>• Signed off Functional and Nonfunctional Requirements document for each project</li> </ul> <p>viii. Project Performance Monitoring Information System (PPMIS) for Smart City Solutions only capturing all agreed monitoring components</p> <p>ix. Complete Smart Solutions' technical, infrastructure and related feasibility and design reports</p>
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		<ul style="list-style-type: none"> <li>x. Smart Solutions Implementation Plan</li> <li>xi. Periodic Progress report</li> <li>xii. Complete and Comprehensive Pre-Live Quality Assurance and Audit Report (Third Party report if complete Smart Solution is designed in house)</li> <li>xiii. Complete Go-Live Report for all deployed Smart Solutions</li> <li>xiv. Capacity Building and Change Management Plan and Periodic Institutional Development Report</li> <li>xv. Periodic Smart Solutions and Related Systems Performance Rep</li> </ul>
7.	Commencement Date and Completion period	23 <sup>rd</sup> November 2021 to 22 <sup>nd</sup> November 2023 (Two Years)
8.	Details of scheme likely to be submitted after survey: (Give information wherever possible)	
9.	General description	<p>The Smart City Planning and Implementation consulting firm (SCPI) will design, develop and implement selected Smart City pilot projects in Sahiwal and Sialkot that include complete turnkey smart solutions deployment. The SCPI firm will be responsible for the entire project planning, management and business process re-engineering to implement Smart solution that will include but not limited to provision of feasibility study and situation analysis, Smart Solutions design &amp; investigations, procurement and contract management, implementation, budget and financial management, cost control, scheduling, risk management, public outreach, monitoring, auditing, reporting, and ensuring compliances and due diligences required for the project. SCPI firm will ensure gender mainstreaming at all levels of the Smart City projects planning, implementation, management and monitoring. SCPI firm will also ensure compliance with all mandatory environmental and social safeguard parameters set by the Client. More importantly, SCPI firm will closely coordinate with the</p>

		<p>ODBM consultants to assess and manage potential synergies and any possible integration in scope of work and technological solutions e.g. ERP/GIS/MIS for assets management etc., as well as to avoid any duplication of efforts. It is envisaged that SCPI firm will have in-house expertise/human resources responsible for the complete in-house design and implementation of all targeted smart solutions. Wherever an external smart solution design and implementation vendor, Systems Integrator (SI) is required or for any activity, SCPI will take prior approval from client. Deputy Director IT will be leading Smart city initiative from the Client. SCPI firm will be responsible for the complete contract and service delivery management of the external SIs and vendors to design, develop and deploy the targeted smart solutions</p>
10	Certificate	<p>Certified that PC-II has been prepared on the basis of instructions provided by the planning and commission.</p>



**PUNJAB INTERMEDIATE CITIES IMPROVEMENT INVESTMENT  
PROGRAM (PICIIP)**



Prepared by:

(DEPUTY DIRECTOR IT)  
PUNJAB INTERMEDIATE CITIES IMPROVEMENT  
INVESTMENT PROGRAM

PROGRAM DIRECTOR  
PUNJAB INTERMEDIATE CITIES IMPROVEMENT  
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Checked by

ADDITIONAL SECRETARY (DEV.)  
LOCAL GOVT. & COMMUNITY DEVELOPMENT  
DEPARTMENT

Recommended by

SECRETARY  
LOCAL GOVT. & COMMUNITY DEVELOPMENT  
DEPARTMENT

# TERMS OF REFERENCE

## PAK: Punjab Intermediate Cities Improvement Investment Project

### Smart City Planning and Implementation (SCPI) Consulting Firm

#### A. INTRODUCTION

1. In September 2017 the Asian Development Bank (ADB) approved the Punjab Intermediate Cities Improvement Investment Project (PICIIP, the Project) to support key urban sectors including water, sanitation, solid waste management, and urban transport and spaces (e.g. parks, riverbanks) in the cities of Sahiwal and Sialkot in Punjab, Pakistan. The total Project cost is estimated at \$250 million, of which ADB will finance \$200 million and remaining \$50 million will be provided by the Government of Punjab (GoP, the Government) as counterpart support. Under the Project, the Government will procure goods and works contracts with an estimated amount of \$200 million. The Local Government and Community Development Department, of the GOP (LG&CD, the Client) will also recruit consulting firms and individual consultants for Project details design, construction supervision, operational design, business modeling, due diligence and capacity building. These Terms of Reference (ToRs) are prepared for the recruitment of Smart city planning and implementation of consulting firm <sup>1</sup>under the consultant recruitment package PICIIP-Cons-07.

#### B. BACKGROUND

2. Cities are the economic, social and innovative core of Pakistan. They generate most of the wealth and are home to about 40% of the country's population<sup>2</sup>. Pakistan's cities, particularly the intermediate cities<sup>3</sup>, are developing at a fast rate and this has led to the rapid expansion of the urban environment but in an uncoordinated, unplanned and unregulated manner. Water supply, wastewater collection and treatment, storm water drainage, and the urban road networks are increasingly unable to respond to population pressures and economic demands. The Government of Pakistan has realized the importance of making its cities, particularly the intermediate cities, more livable and has put the urban sector at the forefront of its national development strategy. Pakistan's Vision 2030<sup>4</sup> and Framework for

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<sup>1</sup>In the following sections of these ToRs, the terms consultancy assignment and the project will be used interchangeably to describe all activities under the scope of work to be performed by the Consultant.

<sup>2</sup>Finance Division, Government of Pakistan: Pakistan Economic Survey 2015-16, Islamabad.

<sup>3</sup>The Urban Unit of Punjab stipulates that a large city is a city with population size between 1.9 to 9.0 million while an intermediate city is defined as a city with population size between 0.25 million to 1.9 million.

<sup>4</sup>Planning Commission, Government of Pakistan, 2007. *Pakistan in 21<sup>st</sup> Century*, Vision 2030, Islamabad.

Economic Growth<sup>5</sup> envisage livable cities as engines of national growth and centers of economic activity, culture, and knowledge. The framework also recognized the advantage of the local governments in managing the urban development on the ground, as they are closer to the beneficiary population with an informational advantage in identifying citizens' preferences as well as essential flexibilities to respond rapidly to evolving city's needs. Under these circumstances, the government amended its constitution to decentralize the role of urban services to the provincial governments<sup>6</sup>. In 2015, the Government requested ADB to process a new urban sector project covering key urban sector developments in the cities of Sahiwal and Sialkot. ADB approved the Project in September 2017.

### C. IMPACT, OUTCOME AND OBJECTIVE

3. The impact, outcome, and the prime objective of the Project are as under:
  - a) The Project is aligned with the following impact: living standards, health, and economy in Sialkot and Sahiwal improved.
  - b) The Project will have the following outcome: access to quality urban services by the residents of Sialkot and Sahiwal cities improved.
  - c) The prime objective of the Project is sustainable urban development through optimization of enhanced service delivery to 100% urban population living in urban area.

### D. OUTPUTS

4. The Project has four major outputs:
  - **Output 1: Water supply systems improved.** This will be achieved through installation/rehabilitation of 114 boreholes and tube wells, 22 water reservoirs, 20 water pumping stations, approximately 350 kilometers of water pipes, up to 15,000 metered customer connections, of which 1,400 will be pre-paid meters on a pilot basis, and IOT based Smart Water Management System.
  - **Output 2: Sanitation systems improved.** This will be achieved through installation and rehabilitation of 18 sewage pumping stations, replacement of approximately 40 km of sewer pipes, provision of missing equipment for wastewater management, unblocking of local drains, and construction of a centralized wastewater treatment plant. Equipment will be procured for improved collection and segregation of solid wastes.

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<sup>5</sup>Planning Commission, Government of Pakistan, 2011. *Framework for Economic Growth*, Islamabad.

<sup>6</sup>The 18<sup>th</sup> Amendment to the Constitution of Pakistan, 2010. Islamabad.



- **Output 3: Urban public spaces improved.** This will be achieved through rehabilitation of 11 parks, 7 km green belts, major streets, footpaths, riverbank paths, and 3 bus terminals, which serve as critical hubs for regional transport systems. Local shops, vendors, and companies will expand new business opportunities with the upgraded facilities.
- **Output 4: Institutional support and capacity development.** This will be achieved through support to institutional reforms such as the establishment of urban service standards, enhancement of the customer service function, and development of new tariff structures. Various capacity development programs—including O&M of key urban services, urban policy and planning, financial management, and tariff policy—will also be delivered to relevant staff in the government and urban service companies. This output will promote behavior changes in hygiene practice and environment through partnership with youth groups and civil society organizations. It will also organize targeted public awareness campaigns.

## **E. IMPLEMENTATION ARRANGEMENTS**

5. The Local Government and Community Development (LG&CD) Department of the Government of Punjab is the executing agency (EA) of the Project and the Municipal Corporations (MCs) in Sahiwal and Sialkot are the implementing agencies. The LG&CD Department has established a Project Management Unit (PMU) and two City Implementation Units (CIUs) in Sahiwal and Sialkot to support the Project implementation activities. The PICIIP has a Project Steering Committee (PSC) to oversee and monitor the implementation of the Project. The Chairman, Planning and Development (P&D) Board is the Chair of the PSC; the Secretary of the LG&CD Department is the Deputy Chair; and the Project Director of the PMU is the Secretary. The PSC provides policy direction and strategic oversight and serve as a focal point for interagency coordination on Project-related matters. However, PMU is responsible for all the operational matters of the Project.

## **F. CONSULTANTS' SUPPORT DURING IMPLEMENTATION**

6. The Engineering, Procurement, and Construction Management (EPCM) consultant has already been mobilized by the PMU to conduct the detailed engineering design for Sahiwal and Sialkot, prepare bidding documents, provide general support to the EA during procurement process, and support the CIUs of the two cities in construction supervision and contract administration.

7. The Operational Design and Business Model (ODBM) consultant firm is currently being engaged to undertake all tasks related to the design of the utilities companies. These include development of business processes, operational manual, support for establishing performance and efficiency parameters, tariff structuring according to level of services, asset management, and enterprise resource planning for effective and efficient service and develop outsourcing/public-private partnership options for service delivery.

8. The Smart City Development Specialist is currently being engaged to conduct preliminary level needs assessment, development of Smart City Strategy and Concept notes for pilot Smart City Projects.

## **G. RATIONALE AND TERMS OF ASSIGNMENT-SMART CITY INITIATIVE**

9. With the introduction of ICTs and digital tools, Smart City has become a much needed initiative in the context of urban and local governance. A smart city as a foundation of efficient local urban governance is an integrated system in which government and its social capital (citizens) interacts and gets benefitted, using technology-based efficient solutions. Smart city is a compressive framework, predominantly composed of ICTs to develop, deploy, and promote sustainable development practices to address growing urbanization challenges. A big part of this digital framework is essentially an intelligent network of connected objects and machines that transmit data using wireless technology and the cloud. The smart solutions also utilize Cloud-based IoT applications to receive, analyze, and manage data in real-time to help municipalities, enterprises, and citizens make better decisions that improve quality of life. The Government of Punjab, under the supervision of its Local Government & Community Development Department has envisaged to utilize the emerging trends of Smart Solutions through the first of its kind Smart City Strategy.

10. Therefore, PICIIP under its output 4 has a specific initiative on using such smart solutions for efficient and resilient urban management. Under the project, The Smart City Initiative is based on two components. **i)** It includes Development of a high level long term Smart City Strategy and Roadmap (underway). The Smart City strategy will provide the overall vision, objectives, governance and institutional framework etc. The envisioned smart city strategy will cover 6 vertices including Smart Governance, Smart Environment, Smart Living, Smart Economy, Smart Mobility and Smart People. The strategy will indicate and outline Smart Solutions/projects to be implemented under each vertical in short, medium and long terms.

11. **ii)** Specific to this assignment and in the short term, it is envisaged that pilot Smart City solutions will be implemented in the cities of Sialkot and Sahiwal. A preliminary level need assessment, e-readiness and situation analysis is conducted for the cities of Sialkot and Sahiwal. Keeping in view the current priorities, resources, capacities and more importantly a

citizen centric focus, pilot Smart City project will be aimed at '**Establishment of Model Integrated Smart City Command & Control Centre (ISC4) for Sialkot & Sahiwal**' with gender mainstreaming ensured at all stages of the project cycle\_(Please refer to the Annex for the high level requirements and features on these envisaged smart solutions). It will include

- i) One Stop Smart Window Operation for MCs/Smart Citizens' Information and Facilitation Centers (**Smart Governance**)
- ii) Solid Waste Management Smart Monitoring System (**Smart Environment/Smart Governance**)
- iii) IOT based Smart Water Supply Management System (**Smart Environment**)
- iv) Air Quality Monitoring, Information & Communication+ Disaster/Crisis Management cell especially urban flooding (**Smart Environment/Resilience**)

12. To implement this pilot phase of the Smart City Initiative, The Project (PICIIP) requires to recruit a Smart City Planning and Implementation consulting firm (SCPI) to design, develop and implement selected Smart City pilot projects in Sahiwal and Sialkot that include complete turnkey smart solutions deployment. The SCPI firm will be responsible for the entire project planning, management and business process re-engineering to implement Smart solution that will include but not limited to provision of feasibility study and situation analysis, Smart Solutions design & investigations, procurement and contract management, implementation, budget and financial management, cost control, scheduling, risk management, public outreach, monitoring, auditing, reporting, and ensuring compliances and due diligences required for the project. SCPI firm will ensure gender mainstreaming at all levels of the Smart City projects planning, implementation, management and monitoring. SCPI firm will also ensure compliance with all mandatory environmental and social safeguard parameters set by the Client. More importantly, SCPI firm will closely coordinate with the ODBM consultants to assess and manage potential synergies and any possible integration in scope of work and technological solutions e.g. ERP/GIS/MIS for assets management etc., as well as to avoid any duplication of efforts.

13. It is envisaged that SCPI firm will have in-house expertise/human resources responsible for the complete in-house design and implementation of all targeted smart solutions. Wherever an external smart solution design and implementation vendor, Systems Integrator (SI) is required or for any activity, SCPI will take prior approval from client. Deputy Director IT will be leading Smart city initiative from the Client. SCPI firm will be responsible for the complete contract and service delivery management of the external SIs and vendors to design, develop and deploy the targeted smart solutions

14. Consultants' selection and engagement will be carried out in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time), using the quality-

and cost-based selection (QCBS) method with a standard quality-cost ratio of 80:20. The consultancy assignment/project is to be performed over a period of 24 months (18 Months implementation + 6 months' post implementation support). The terms will be revised based on consultations between the parties involved in the assignment as per changes and or additional requirements identified during implementation. Details of the required scope of work and outputs, deliverables and reporting requirements, indicative staffing, consultant positions, key tasks and qualifications, and contract administration and reporting for this project are provided in the following sections.

## **H. SMART CITY PLANNING & IMPLEMENTATION (SCPI) CONSULTING FIRM MAIN OUTPUTS**

The consultancy assignment/project is divided into four major outputs spanning over the 24 months (18 Months implementation + 6 months' post implementation support) of Consultant's engagement with the Project. The four outputs are termed as **Output A: Project Planning and Management; Output B: Smart City Solutions Planning and Design; Output C: Smart City Solutions Implementation Management; Output D: Capacity Building & Institutionalization of Smart City Solutions (Including Monitoring the O&M)** that will predominantly involve post implementation support. These outputs are further segregated into tasks, activities and deliverables against each output. The Consultant's activity roadmap spanning 24 Months is summarized as under:

- a) **Output A: Project Planning and Management (24 months<sup>7</sup>)**
  - a. Task 1: Inception/Work Plan
  - b. Task 2: Diagnostic Study, Situation analysis & Stakeholder Consultations (Combined with Output B)
  - c. Task 3: Financial, Budget and Accounting Management
  - d. Task4: Procurement Management
  - e. Task 5: Project Coordination and Public Outreach
  - f. Task6: Development of PPMIS and Linkages of Smart City Solutions to Dashboards
  
- b) **Output B: Smart City Solutions Planning and Design (6 months)**
  - a. Task 1: Feasibility Study and Surveys and Site Investigations
  - b. Task 2: Mapping As-Is Processes
  - c. Task 3: To-Be & Requirements Specifications
  - d. Task 4: Development of Smart Solutions (Functional requirements, Technical Design & Configurations, Technical validation, Defining configuration requirements and implementation modalities)

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<sup>7</sup> Output A will cover the entire project cycle that is 24 months

- c) **Output C: Smart City Solutions Implementation Management** (12 months)
  - a. Task 1: Smart Solution Project Implementation Support
  - b. Task2: Procurement, Installation/deployment, monitoring and commissioning of necessary hardware
  - c. Task 3: Setting up Smart Solution test conditions and parameters
  - d. Task 4: Pre-Live Quality Assurance and Testing Audit
  - e. Task 5: UAT and Go-Live Report
  
- d) **Output D: Capacity Building & Institutionalization of Smart City Solutions** (6 months)
  - a. Task 1: Capacity building of stakeholders on Smart City Solutions
  - b. Task 2: Monitoring the O&M

**Figure 1: Main outputs and activity road map**



## I. Scope of Work

### Output A: Project Planning and Management

#### Task 1: Inception/Work Plan

##### List of Activities:

- The SCPI firm shall have a kick-off meeting with the Client to understand expectations from the project and it will mobilize the entire project team within 15 days.
- During the inception meeting, the SCPI firm's team will present complete project approach based on the TORs, methodology, key activities, outputs, deliverables, timelines, project team profile and personnel deployment schedule to meet the requirements stated under the TORs.
- SCPI firm's team shall also discuss the data to be collected from various sources, surveys to be undertaken, analysis to be undertaken to complete the functional design document as well as key Stakeholders to be consulted, way forward and support required from the PICIIP PMU. The SCPI firm team led by the team leader shall review and discuss the high level preliminary Smart City Concept Note of the pilot Smart City projects for which feasibility study/ Detailed Project reports are to be prepared.
- Based on the review, the SCPI firm shall identify potential fast track approaches and the prioritized components of the identified project or projects itself that can be taken up early for implementation. The project development and implementation activities for such identified fast track projects/ components shall start at inception phase and run in parallel with other activities.
- Prepare a detailed work program, including all pertinent activities and critical paths. Responsibility and function of each team member, coordination mechanism and procedures between the SCPI firm and PICIIP PMU; reporting system and the procedure etc. to ensure orderly and uninterrupted progress of the works. The mechanism and procedures set by the Consulting firm shall be subject to the approval by the client.
- Identify all necessary approvals and permissions etc. those would be required during the implementation of the Contracts in accordance with the Government regulations and provisions of the Contracts.
- Discuss and prepare high level plan to develop Smart City Project Performance Monitoring Information System (PPMIS) APP or any other equivalent software to schedule and monitor all aspects of smart projects implementation
- The SCPI Firm shall prepare an Inception Report within 1 month of commencement which will include a report on activities during the mobilization period together with an updated work program and personnel

schedule. The Inception Report shall include an agreed project plan, schedule of project deliverables and timelines. These may include for example timelines, Work Breakdown Structure, required resources, potential procurements and milestones etc. to design, implement and provision of post implementation support for smart solutions such as **One Stop Smart Window Operations** for MCs Sialkot & Sahiwal, **IOT Based Smart Water Management System, Solid Waste Management Smart Monitoring Systems etc.** and related institutional development, proposed forms of contract, contract packaging and the public outreach program.

- SCPI firm will ensure through inception report, its approach towards gender mainstreaming at all levels of the Smart City projects planning, implementation, management and monitoring. SCPI firm will also ensure compliance with all mandatory environmental and social safeguard parameters set by the Client
- Based on Client's feedback, the SCPI firm shall revise above and incorporate Client's suggestions and submit a revised inception report.
- Any other agreed tasks identified and delegated by the Client.

## **Deliverables**

A comprehensive **Inception Report and Work Plan** along with the detailed tasks and activities, list of deliverables and the timelines under the defined scope of work for the consultancy assignment. The report shall complete project plan to deliver the smart city projects

## **Task 2: Diagnostic Study, Situation analysis & Stakeholder Consultations (Combined with Output B)**

### **List of Activities:**

#### **i. Stakeholder Consultations**

- Hold consultations to determine internal (MCs, LG Departments etc.) and external stakeholders (citizens etc.) needs and obtain their input about the envisaged smart city solutions (One Stop window operations for MCs, Smart SWM Monitoring system, IOT based Smart Water Management System etc.) through workshops, interactive sessions, focus group discussions etc.
- Assist the client in validating that high-level government officials support the initiative to obtain championship and ownership from the highest level
- Survey government departments and other service vendors to assess barriers to participating in the Smart City initiative and willingness to devolve services to the Smart City Solution such as One Stop Window for MCs and develop the relevant communications and change management strategy thereof.

- Any other agreed tasks identified and delegated by the Client.

## ii. **Diagnostic Study & Situation Analysis**

- Review the preliminary concept note and basic High Level Functional requirements compiled by the Smart City Development Specialist along with envisaged surveys, investigations and detailed studies of the existing services that various government departments are providing to citizens (automated as well as non-automated).
- Conduct site visits, undertake necessary surveys and examine the potential and scope for deploying the intended Smart City Solutions in Sialkot and Sahiwal
- Study existing national and international benchmark projects, their salient features and important lessons relevant to the context of Smart City projects.
- Identify and list all the government services, particularly related to MCs that are already automated as well as private/third party services that are not offered by government departments but are automated and can be included in the Smart City projects
- Consult the available documents such as city development plans /strategy plans, sanitation plans, and review available relevant feasibility studies etc.
- On the basis of the stakeholder consultations and situation analysis, SCPI firm will provide concrete recommendations along with the rationale on the identification of appropriate custodian as well as overall custodianship, ownership and governance model to anchor and manage Integrated Smart City Command & Control Center and the deployed smart solutions
- Review existing status of physical Infrastructure and other available secondary data
- Identify requirements of any quick surveys, studies and investigations
- Carry out necessary surveys, investigations, situational analysis, cost benefit analysis, prepare preliminary project cost estimates
- Review existing available documents & infrastructure on the proposed smart solution and integrate them into modules
- Prepare the separate high level as-Is of each envisaged smart city project



- Identify & prepare the interfaces of integration between the modules under **As-Is** processes (Detailed report is required under Output B)
- Prepare **'to be'** processes that will provide foundation for design of smart city solutions (Detailed report is required under Output B)
- Work with the relevant stakeholders to identify and finalize the relevant site for the Integrated Smart City Command & Control Center (ISC4)
- 
- Ensuring sign-off from key stakeholders (MCs, LG departments, other stakeholders) in terms of site selection, functionalities, systems, operational requirements, service levels etc. for each of the project
- Preparation of situation analysis report for each project
- Preparation of a diagnostic study for each smart city project

## **Deliverables**

**Situation Analysis & Diagnostic Study** that will provide comprehensive overviews of need assessment, e-readiness and functional requirements for each of the envisioned smart city projects. It will also include the relevant governance model to anchor and manage ISC4 and Smart Solutions with clearly identified custodianship, ownership model and stakeholders. It will also provide foundation for the deliverables of Output B- Smart City Solutions Planning and Design

## **Task 3: Financial, Budget and Accounting Management**

### **List of Activities:**

#### **Budgeting, Finance & Accounting Management**

- Assist Client in raising, regulating, utilizing, and managing various funds and grants allocated by various sources to implement Smart City projects such as ADB & Government.
- Prepare the detailed project costs and financing plan/project financing options for each Smart City project and assess the need for additional fundraising to bridge gaps between capex required and allocable funds
- Undertake project finance and budget analysis and high-level funding requirement for projects for achieving service level benchmarks / KPIs
- Prepare detailed budgets and financial planning under various categories such as year, components, activity etc.

- Establishing an appropriate financial accounting and control system for each smart city project that can be integrated/fed into PICIIP's accounting system
- Establishing all necessary records and the procedures for maintaining/updating such records for each subproject and for the entire Program
- Ensuring accurate and timely submissions of all required financial reports to the PICIIP PMU
- Establishing systems for smooth and timely funds flow from PICIIP to Contractors (where ever subcontracting is needed); and
- Developing and implementing procedures for timely payments to the contractors and monitoring for compliance.
- Any other agreed tasks identified and delegated by the Client

#### **Revenue Generation and Sustainability Model**

- Based on the situation analysis, diagnostic study and prioritization of services to be automated in Sialkot and Sahiwal, determine the existing revenue that the intended Local Government Services are generating, perform cost benefit analysis and prepare a detailed and complete revenue model for each of the project
- Study and review the latest departmental schedule of rates for various services prepare detailed estimates thereof and recommend revised rates for the services to be delivered under the Smart City projects (e.g. One Stop Window for MCs in Sahiwal and Sialkot).
- Analyze and compare potential financing models and determine whether the identified Smart City Projects should be run publicly, privately, through public-private partnerships, or through a combination of models.
- Examine options for private sector involvement considering the long term sustainability of Smart City projects (as feasible and applicable) on the basis of BOO, BOT, or other relevant formats, as a whole or part involvement in development of on-site/ off-site infrastructure and develop Revenue Sharing Model which shall include recommendations on the revenue sharing between the local government and private service providers.
- In case of involvement of a private partner, develop detailed process and procedure on privatization of operation and methodology for revenue generation.
- Conduct analysis of cash flows, NPV/IRR to determine financial feasibility and ownership structure for various financial models for each smart city project.

- For the long term financial and institutional sustainability of the smart city projects, list out all potential sources of funding and identify innovative financing mechanisms through which the PICIIP's smart city projects can be executed developing a detailed implementation plan for dovetailing of funds through convergence with other sources of funds such as ongoing federal and provincial Programs/Schemes.
- Assess and identify the capacity gaps and human resource required in medium to long term to manage the planned ISC4 functions and mechanisms as well as provide the specific way forward/solution to fill these gaps and requirements through various possible solutions and instruments e.g. PC1, Public Private Partnership etc.
- Any other agreed tasks identified and delegated by the Client

### **Deliverables**

- Detailed and complete **financial and revenue model** for each Smart City Project
- Budget and costing model** for each Smart City Project
- Financial Management and Accounting System

### **Task 4: Procurement Management**

#### **List of Activities:**

#### **i. Bid Document Preparation, Procedures and Evaluation**

- The type of procurement is expected to be different for each of the key works components to deploy smart solutions under each identified and it is the responsibility of the SCPI FIRM to recommend the most appropriate methodology.
- The SCPI Firm shall support the PICIIP PMU throughout the bidding process for all works and operation contracts from bidding document preparation along with SLAs and prequalification through to the completion of contract negotiations and award.
- This shall include but not be limited to the preparation of bidder prequalification documents, attendance at the pre-bid meetings and site visits, technical and financial bid evaluation for single stage and/or two stage bid procedures and the preparation of Bid Evaluation Reports for approval by the Client Bid Evaluation Committee.
- Technical specifications and requirements must be approved by the client. SCPI will take prior approval from the client in case of any change in bid document

- For two stage bids the SCPI FIRM shall be responsible for seeking any clarifications of the first stage technical bids and preparation of relevant memorandums for inclusion in the invitation for the second stage bid.
- The SCPI FIRM should ensure that bidding documents contain all necessary safeguard documentation including the social safeguard assessments, environmental management plans and the resettlement plans for the respective contract packages (if and wherever required).
- Prepare procurement template / bid document based on state general financial rules, procurement rules and other relevant guidelines including bid documents for PPP projects
- Assist in administering bidding process for selection of contractors /vendors / PPP partner / SIs
- Any other agreed tasks identified and delegated by PICIIP PMU

## **ii. Contract Administration**

The SCPI FIRM shall assist the PICIIP PMU with the administration of all contracts for design, development, implementation and deployment of smart solutions, including all service level agreements (SLAs). This will include but not be limited to:

- Working as the Engineer or PICIIP's Representative within the context of the Conditions of Contract;
- Preparing Construction (if and wherever required such One Stop Smart Window) and Operation Monthly Progress Reports in agreed formats for each project, including physical and financial progress, reports on variations, time-extensions, problems and issues etc.
- Regularly monitoring physical and financial progress against the milestones as per the Contracts so as to ensure completion on time;
- Monitoring and enforcing, as detailed out in the Contractors' QA & QC Manuals, the quality of inputs, processes, and outputs during all activities of construction to ensure the highest quality of works conforming to the specifications and drawings;
- Examining Contractors' claims for time extensions, variations, additional compensation etc. and recommending appropriate decisions;
- Assisting the PICIIP PMU in the resolution of various other contractual issues and overall contract management; and
- Monitoring the performance of the contractors during the Defects Notification/Liability period.

- Review and approve the program of work submitted by the contractor.
- Also verify the IPC (Interim Payment Certificate), bills of contractors / vendor.
- Any other agreed tasks delegated by the PICIIP PMU

### **iii) Construction Engineering Management**

The establishment of Model Smart City Control Center will require construction and/or refurbishment/customization of building that will include One Stop Smart Window for MCs operations Sialkot/Sahiwal and Control room/dashboards for Solid Waste Management Smart Monitoring and Smart Water Supply Management System etc. The SCPI Firm shall take prior approval from the Client and undertake, on behalf of the Client, the supervision and management of all construction contracts during the period of the consultancy.

This work shall be comprehensive and shall include but not be limited to the following:

- Carrying out necessary and required feasibility assessment, working with & recommending the Client and relevant stakeholders on the selection of the appropriate site/building to develop ISC4 and deploy smart solutions
- Checking contractors' designs and drawings for Design-Build, PPP and Service Contracts
- Furnishing detailed drawings, with revisions as necessary, to the contractors for the Build only contracts;
- Supervising and monitoring construction of all project components, preparing measurements for works completed and in progress and verifying bills for payment to the contractors/ suppliers after ensuring the quality & quantity as per specification;
- Checking the line, level and layout of construction to ensure conformity with the contracts, proposing any changes in the plans required as a result of findings during construction such as unforeseen obstructions;
- Assessing and ensuring the adequacy of contractors' inputs in terms of materials, equipment, construction machinery, workers, and construction approach and methodologies;
- Review, comment, and recommend for PICIIP PMU's approval of the Construction contractor's proposed implementation schedule and programs, including time over-run aspect, if any. Monitor the schedule and proactively instruct the Contractors to take corrective action to complete the works in tune.
- Examine, check, comment and recommend for necessary action on the Contractor's proposals, plans, detail designs, drawings and request for change, if any.

- Monitor and report on physical progress of the works and financial disbursements.
- Review and recommend on the Contractor's claim for progress payments.
- Review and examine the Contractor's request for variation orders, extra items, new rates, time extension etc. and submit recommendations for approval, if appropriate.
- Assist in constructively and submit recommendations in resolving any difficulty or dispute that may arise during the Program implementation.
- Examine, evaluate and submit recommendations on any claims for additional time OT payment submitted by the contractors.
- Assist PICIIP PMU in certification of partial, substantial and final completion of the works in accordance with the provisions of the Contracts, including stage certification and final acceptance test.
- During the entire stage of project implementation assist on liaison with local authorities and state / central government agencies.
- Prepare essential works. Documents including quick progress report, quality, disbursement or any other relevant matter as may be required by the PICIIP PMU to submit it to the Executing Agency
- Ensure required instructions received and complied with the requirements of the contract.
- Be responsible for management and supervision of Construction contracts under the current Law of the host country.
- The SCPI firm shall maintain sufficient site-based staff, with clear allocation of duties, to supervise day-to-day construction activities.
- For the components issued on design and build contract, review the detailed engineering design for its correctness and adequacy prior to start of Works, report of findings and propose/ recommend for modifications or corrections to any defect or omissions.
- Check the adequacy and quality of Contractor's input in terms of material, equipment & machinery, workers and safety requirement prior to commencement of the works and time-to-time during the course of construction activity.
- Facilitate in setting out the works and ensure its correctness during the implementation.

- Inspect and supervise the day-to-day operations and activities of the contractor to ensure that the completed works are in compliance with the approved drawings and specifications of relevant construction contracts.
- Recording of measurements of the works executed or in progress as the case may be and review & scrutinize contractor's periodic invoice and certify for release of payment as directed by the PICIIP PMU.
- Monitor the contractor's compliance with safety requirements during and prior to the commencement of construction activity. Assist in preparation of Accident report in the event of occurrence of any accident on the site.
- Ensure the compliance by the contractor of the Environmental Monitoring/Environmental Management Plan in the Contract or required by the regulatory authority.
- Maintain at site or at project office, all duplicates of the Contracts, technical drawings, catalogues and drawings, and specifications, survey notes, quality control documents and any other documents, as necessary.
- Assist the Contractor to develop alternative methods to overcome unexpected obstacles which may affect to the execution of the works.
- Co-operate, facilitate and report on all removal/ relocation of on-site activities pertaining to ground or underground utilities.
- Examine the completion drawings/ as built drawings prepared and submitted by the Contractor, submit recommendations in the event of change or correction is required therein prior to acceptance by the PICIIP PMU.
- Inspect the Works at appropriate intervals during the Defect Liability Period and certify the Defect Liability certificate.
- Inspect the works on completion and before taking over, and indicate to the Engineer-in-Charge/Project Manager and identify any outstanding work that is required to be carried out by the Contractor during the Defect Liability Period.
- Assist the Client in taking over completed works from the contractors, in particular by preparing lists of defects to be remedied / corrected by the contractors.
- Assist the Client for determining a reasonable reduction in the Contract Price due to non-completion of the remedial work by the Contractor.

- Ensure maintenance of documentations on the Quality control and Quality assurance, test reports, log books etc by the Contractors in an acceptable manner.
- Check internal quality management system of the contractors: documentation, quality management method, quality control reporting, quality control staffing.
- Submit its recommendation any change if warranted/ deemed necessary.
- Periodically audit contractor's compliance with quality control/ quality assurance requirements and submit report to the Client.
- Store all records and documents related to quality assurance/ quality control at safe custody and make Available when required.
- Maintain daily notes/ diary of execution progress for each construction activity on site as well as notes of arising potential problem on site that may affect the execution progress or require change or variation.
- Attend periodic meetings with Client and the contractors to discuss, approve the execution progress, remaining progress, difficulties, and any potential problem anticipated that may effect on execution progress, propose constructive solutions/ remedies to overcome problem and difficulties for smooth operations of execution progress.
- Attend, facilitate constructively and report all feedback/ complaints of community related to execution of works.
- Carrying out third party inspections as necessary and providing certification on the quality of the materials/plant/supplies based on such inspections;
- Monitoring and enforcing, as detailed in the Contractor's Safety Manual, the measures established to ensure safety of the workers, other project personnel, the general public and works;
- Evaluating and processing contractors' requests for interim payment;
- After physical completion of the contracts, review the as-built drawings and operating manuals prepared and submitted by the Contractor

#### **Task 5: Project Coordination and Public Outreach**

##### **List of Activities:**



- The SCPI Firm will establish a schedule of coordination and progress meetings, to be approved by the Client, to ensure that all stakeholders are kept fully informed of the status and activities of the Project. The SCPI FIRM will submit monthly Progress Reports in an agreed format or through software (if possible) and shall fully support the client in reporting to the Executing Agency and Asian Development Bank
- Coordinate with all the stakeholders and support the local government departments while interacting with various agencies (internal and external) during the course of the project.
- Build mechanisms to ensure coordination and consultation between all key stakeholders of the PICIIP on a continued basis to facilitate the execution of the project.
- The SCPI FIRM will undertake a public outreach program that will generate citizens' awareness of the PICIIP's smart city projects in particular, One Stop Window for MCs' Services in Sialkot and Sahiwal
- The SCPI FIRM will engage with civil society organizations (CSOs) to seek citizen's participation and ensure that it is socially inclusive. The SCPI FIRM will keep the citizens of the two cities informed of the objectives and progress of the Smart City projects and employ suitable means to communicate the information including social media, leaflet campaigns etc.
- The SCPI Firm shall work with the Client to project the perception and create brand image of PICIIP's Smart City Initiative and to implement appropriate multi-media public awareness and information campaigns covering the measures being taken by PICIIP team to keep Citizens of Sialkot and Sahiwal informed on the progress.
- Any other agreed tasks identified and delegated by PICIIP PMU

## **Deliverables**

- i. PICIIP's Smart City Initiative's **Communication and Public Outreach Strategy**
- ii. Multi Stakeholder based **Coordination Mechanism**

## **Task 6: Development of PPMIS for Smart City Solutions and Linkages of Smart City Solutions to Dashboards**

### **List of Activities:**

The SCPI Firm shall prepare an integrated Project Performance Monitoring Information System for all Smart City Projects that will at least:

- Continuously monitor progress of the Smart City projects, based on work plans for all stages (design and construction), regularly analyze the progress against the work plans including physical and financial

progress of subprojects during construction, recommend ways to accelerate project implementation, assess reasons for delays, if any and identify measures for improvement

- Monitor timely completion of contracts with the highest standards of quality and the best construction management practices on site including compliance with all safety requirements;
- Showcase the entire project progress through a GIS based, multipurpose, holistic and easy-to-use dashboard
- Integrate the outputs of the Smart City Projects to the a centralized PPMIS dashboard that is being developed by the client for the entire PICIIP outputs
- Any other features as agreed with the PICIIP PMU

## **Deliverables**

Project Performance Monitoring Information System (**PPMIS**) for Smart City Solutions only capturing all agreed monitoring components

## **Output B: Smart City Solutions planning and Design (combined with the OUTPUT A, Task 2)**

### **Task 1: Mapping As-Is Processes**

#### **List of Activities:**

SCPI will:

- Conduct the entire pre-requisite Business Process Reengineering (BPR) process of MCs Sialkot and Sahiwal as well as related departments involved in the Smart City projects to design and implement smart solutions
- Review existing available documents & infrastructure of MCs Sialkot and Sahiwal and other related departments involved in the Smart City projects.
- Conduct comprehensive exercise of mapping all 'As-is' processes for each of the department, function and service that will be converted into smart solutions for each project (One Stop Smart Window, IOT based Smart Water Management System Solid Waste Management Smart Monitoring system etc)
- Prepare the separate As-Is consolidated mapping document of each smart city project.
- Convert and submit a simple & clear architecture of whole As-Is system consisting of all Smart City Projects in an integrated manner.

- Any other agreed tasks identified and delegated by the Client

## Deliverables

- i. Separate '**As-is**' maps of all departments, functions and processes to be converted in smart solutions
- ii. Consolidated '**As-is**' maps consisting of all Smart City Projects in an integrated manner.

## Task 2: To-Be & Requirements Specifications

### List of Activities:

- Prepare the separate 'To-Be' process of for each of the department, function and service that will be converted into smart solutions for each project (One Stop Smart Window, IOT based Smart Water Management System, Solid Waste Management Smart Monitoring system, etc)
- Identify & prepare the interfaces of integration between the projects under To-Be.
- Submit a simple & clear architecture of both separate (One Stop Smart Window, IOT based Smart Water Management System, Solid Waste Management Smart Monitoring system etc) as well as **the whole To-Be system** consisting of all 'Smart City Projects' in an integrated manner (wherever required and possible).
- Prepare the functional & non-functional requirements specifications for each of the identified smart city projects as well as to integrate them into one system (wherever required and possible).
- Conduct an assessment on existing applications & systems deployed and functional in other departments (Education, Health, Transport etc.) and assess their integration and/or potential interface (where ever possible) in ISC4 as well as prepare recommendations on integration in medium to long term
- Validate with and sign off all requirements documents with the relevant stakeholders (MCs, LG Departments etc.)
- Prepare Networking and connectivity requirements for all smart city projects
- Identify & prepare Data digitization requirements
- Identify & prepare Training requirements
- Study of various smart technologies and suggest the most viable techno economical solution
- Prioritize the activities of the projects/components and prepare a tentative implementation plan

- Identification the risks & mitigations
- Any other agreed tasks identified and delegated by PICIIP PMU

## **Deliverables**

- Complete **Business Process reengineering (BPR) report**
- Separate '**To be**' **process maps** of all departments, functions and processes to be converted in smart solutions
- Consolidated 'To be' maps** consisting of all Smart City Projects in an integrated manner (wherever required and possible)
- Signed off **Functional and Nonfunctional Requirements document** for each project (along with recommendations/model on integration of and/or creating interface of existing functional systems/applications in different departments)

## **Task 3-Development of Smart Solutions (Functional requirements, Technical Design & Configurations, Technical validation, Defining configuration requirements and implementation modalities)**

*It is envisaged that SCPI firm will be responsible for complete in house design and implementation of all targeted smart solutions. Where ever an external smart solution design and implementation vendor (SI) is required, SCPI will take prior approval from the Client and it will be responsible for the overall contract and service delivery management of the external SIs and vendors*

## **List of Activities**

### **Smart Solutions Design-Technical Components**

Based on the signed off functional requirements documents for each Smart City Project, SCPI will:

- Identify the leading practices and benchmarks across each of the domains and intended smart solutions
- Identification of services that will be integrated and delivered through the proposed technology solution
- Study of the existing initiatives which need integration with the proposed initiatives, and preparation of integration blueprint
- Enumeration of the existing applications and data components which would need to be integrated with the new technology solution
- Identify systems / solution platform along with detailed system architecture

- Prepare detailed plan with system requirements and configurations
- Identify implementation model and procurement model for each of the technology solutions
- Prepare overall project cost assessment as well as project funding mechanism
- Prepare implementation plan, detailing out the components, locations, partners, procurement phases, etc. for each of the solution components. Identify the responsibilities of various stakeholders in successful implementation of the solutions
- Enumeration of the KPIs and SLAs for each of the solution components
- Any other agreed tasks identified and delegated by the Client

#### **Technical validation and defining configuration requirements**

- Technical validation of technology architecture, data exchange protocols, integration methods
- Resolving ways of achieving functional capabilities through hard-coding vis-à-vis reconfigurable methods
- Technical validation of bought-out components, specifications, OEM equipment
- Based on the functional needs and evolving operating models, define in detail the various workflows, KPIs, alerting and reporting requirements
- Match needs of users with capabilities of chosen smart technology architecture, balancing immediate, medium-term and long-term needs
- Assess variations that emerge in specific locations, quantities, specifications, functional capabilities
- Any other agreed tasks identified and delegated by the Client

#### **Smart Solutions Design-Feasibility Study and Surveys and Site Investigations**

Based on the developed, discussed and agreed technical design, wherever required, for instance for One Stop Smart Window for MCs in Sialkot and Sahiwal, the SCPI FIRM shall:

- Undertake detailed feasibility assessment studies, including on-ground studies, conduct analysis and calculations based on common rules and benchmarks to ascertain the design of the proposed solutions
- Undertake a comprehensive review of existing documents and studies/DPRs available to establish an information database and all existing other relevant information, reports, data, documents, maps, policies, plans and records pertaining to scope of the Project.
- The SCPI Firm shall prepare the outline scope, program and budget for all necessary surveys and investigations. The SCPI Firm shall summarize this element of the Project in a Data Review Report along with possible need to phase the construction of work which shall be submitted for approval
- Based on the approved feasibility report, prepare module wise preliminary/detailed designs report (PDR/DPR) of the selected smart solutions to be deployed as per requirement of the project in accordance with established IT & engineering practices, tender drawings, and cost estimates etc.
- For preparing PDR/DPR and wherever required, the consultant will carry out all the required engineering surveys and investigate such geotechnical investigation, site survey, construction material survey, etc. including sufficient off-site information to allow relationships with possibly usable off-site infrastructure to be established.
- The SCPI FIRM shall visit the proposed work sites of smart city projects in conjunction with PICIIP technical team and examine the current status, undertake critical evaluation of the existing service condition of facilities, civil structures, electrical installations etc, identify needs for a structural condition survey and any other relevant investigations.
- Schedule and prioritize the critical surveys in such a way that the required designs can be carried out efficiently and expeditiously pursuant to the implementation of the Project.
- Prepare the necessary sub-contract documents for comprehensive survey, testing, laboratory analysis and reporting.
- Identify the requirement for any comprehensive condition assessment and physical evaluation of existing assets related to the projects (if required).
- All sub-contracts for the surveys, geo-technical and site investigations shall be contracted and paid by the PICIIP directly using the sub-contract specifications and documents prepared by the SCPI Firm.
- Any other required and agreed tasks identified and delegated by PICIIP PMU

## **Requirements of Design**

Wherever required (e.g. for One Stop Smart Window project), The SCPI firm will:

- Submit designs with all necessary information to enable the PICIIP PMU technical team to fully understand the design components through the submission of Specifications, Drawings, BOQ and design calculations and for the Contractor to be able to build the designed works without further design input being necessary, with the exception of items to be provided by a supplier of the Contractor's choice.
- Review and approve the detailed designs and good for construction drawings submitted by the contractor
- In case of the projects (Such as One Stop Smart Window) to be executed using the Design-Build, PPP and Service Contracts mode, prepare the tender designs and specifications. The detailed engineering shall be carried out by the Contractor. Tender design and specifications must be approved by Client before finalization.
- In case of build only contracts, prepare the detailed designs.
- The SCPI FIRM shall review the as-built drawings submitted by the contractor and approve them as appropriate.

## **Deliverables**

Complete Smart Solutions' technical, infrastructure and related feasibility and design reports

## **Output C: Smart City Solutions Implementations Management**

It is envisaged that SCPI firm will be responsible for complete in house design and implementation of all targeted smart solutions. Wherever an external smart solution design and implementation vendor (System Integrator, SI) is required, SCPI will take prior approval from the Client. SCPI firm will be responsible for the entire contract, deliverables management and monitoring of any external SI or other vendors

## **Task 1: Overall Smart Implementation Management Support**

### **List of Activities**

#### **SCPI firm will:**

- Develop and manage the implementation plan for the agreed technical and functional designs of the smart solutions

- Co-ordinate Detailed Project Reports (DPRs) submissions/approvals and should be agreed with the client. In case of involving any external system integrator (SI), be responsible for reviewing the deliverables submitted by SI within a period of 2 weeks (or as agreed with PICIIP PMU) from the receipt of that deliverable. SI firm will also not only keep the Client updated about the activities but Client will also directly seek progress updates and/or monitor SI activities
- Highlight deviations/issues in the deliverables of SI to relevant authority within the specified time limits and assist in resolution of issues.
- Ensure that the technology standards, guidelines & frameworks are adhered to during implementation.
- Monitor and maintain the issue tracker and keep on updating the status of all risks and issues from time to time.
- Defining the escalation mechanism for timely resolution of issues & risks.
- Define and implement pre-live quality assurance and technology audit certification.
- Overall monitoring of all Service Level Agreements (SLAs) required for the implementation of Smart Solutions
- Monitoring the performance of the SI against the base project plan
- Monitoring the performance of the overall system in terms of availability & efficiency against the service levels already defined for SI
- Suggest changes in SLAs, if required
- Suggest corrective and preventive measures to PICIIP PMU and SI to enhance the performance of the system
- Provide the support the Client
- and relevant stakeholders for the successful completion of the Smart City Project and its closure.

## **Deliverables**

Overall Smart Solutions Implementation Plan including all key activities mentioned above



## **Task 2: Procurement, Installation/deployment, monitoring and commissioning of necessary hardware, Software and other equipment**

### **List of Activities**

SCPI Firm will:

- Support the Client in procurement of all required hardware, software and related equipment to completely implement Smart Solutions
- Be responsible for installation, monitoring and commissioning of all ICT infrastructure as well as other required equipment
- Ensure its own and/or SI's facility management services and help desk to ensure system up time
- Provide fortnightly reports to the Client for the status of implementation till "go-live"
- Any other required and agreed tasks identified and delegated by the Client

### **Deliverables**

- i. **Procurement Plan** including all required hardware, software and equipment to implement complete smart solutions
- ii. **Periodic Progress report** including all activities mentioned above

## **Task 3: Setting up Smart Solution test conditions and parameters**

### **List of Activities**

SCPI firm will:

- Be responsible and closely review the FAT (Functional Acceptance Testing), Load Testing, Performance of deployed smart systems and solutions
- Perform and validate Scalability Testing, Security testing
- Review necessary baseline documents and other documentary evidence provided carrying out the testing
- Reporting and escalation for any kind of process related bottlenecks

## **Deliverables**

**Periodic Progress report** highlighting status of the smart solution development and FAT preparedness

### **Task 4: Pre-Live Quality Assurance and Testing Audit**

#### **List of Activities:**

Once the Smart Solutions are ready to go live, SCPI firm will be responsible for minimum of the following standard activities:

#### **Application audit**

- a) Functionality audit vis-à-vis the Functional Requirement Specification (FRS) agreed upon during development phase (Third Party Audit if the smart solution is completely designed in- house)
- b) Determine systematic measures implemented to control and secure access to the application programs and data including password controls, user authentications, roles and responsibilities, audit trails and reporting, configuration and interface controls, etc.
- c) Review of database structure including:
  - Classification of data in terms of sensitivity & levels of access
  - Security measures over database installation, password policies and user roles and privileges
  - Access control on database objects – tables, views, triggers, synonyms, etc.
  - Database restoration and recoverability
  - Audit trails configuration and monitoring process
  - Network connections to database

#### **Review of Network and Website will include:**

- Penetration and vulnerability testing for Network, Website and any web-based application / software and responsible for fixing of security threats.
- Installation of IPS, IDS and Firewall.
- Security exposures to internal and external stakeholders
- Installation of requisite prevention systems like Intrusion Prevention Systems (IPS), etc.

#### **Review and Implement of Security Policies and Controls will include:**

- Review of backup process, including schedule, storage, archival and decommissioning of media
- Physical access controls review (over DC and other critical area)

- Review of change management process
- Incident management process – covering identification, response, escalation mechanisms
- Anti-virus (malware) controls – patching, virus definition file update
- General computer controls review
- Audit of IT Infrastructure will include monitoring the deployment of IT infrastructure at various locations including Data center and Disaster recovery center
- Performance / SLA Audit - whether the actual level of performance of the services is the same as specified in the contract of SI.
- Identify the key issues / bottlenecks in the system and will suggest the mitigation plans.
- Overall compliance to MSA and SLA - The compliance of the implementation partner with any other obligation under the MSA and SLA.
- Any other required and agreed tasks identified and delegated by PICIIP PMU

### **Deliverables**

- Complete and Comprehensive Pre-Live Quality Assurance and Audit Report (Third Party report if complete Smart Solution is designed in house)

### **Task 5: UAT and Go-Live Report**

#### **List of Activities**

After the satisfactory Quality Assurance report and approval to Go-Live, SCPI firm will be responsible for

- Assessing and certifying the solution and associated infrastructure & services
- Planning, preparing & execution of the User Acceptance Test, tracing the functional requirements before the Go Live
- Preparation and submission of Go-Live Report, which should shall at least include the following:
  - ✓ Hardware at various locations and data center
  - ✓ Networking equipment and connectivity
  - ✓ Data digitization and migration
  - ✓ Training to the departmental personnel
  - ✓ Handholding support
  - ✓ Integration with applications of other departments / agencies etc.
  - ✓ Any corrective or preventive actions required from any of the stakeholders
  - ✓ Highlight the changes required in the applications and ensure that the suggested changes are incorporated in the system by the SI (or by SCPI firm if the solution is designed in-house)

- Design, Development and implementation of small-scale Data Center AND Disaster Recovery Site for smart city solutions. OR Implementation of Smart City solution with existing Data Center of the Client.
- Requirements of Data Center, Technical specifications, Equipment detail and procurement.
- Development of Smart city software if required.
- WAN Connectivity design, requirements and detail of cities.
- Training & Certifications (National & International) for IT staff of the Client.

## **Deliverables**

- **Complete Go-Live Report** for all deployed Smart Solutions

## **Output D: Capacity Building & Institutionalization of Smart City Solutions**

### **Task 1: Capacity building of stakeholders on Smart City Solutions**

#### **List of Activities**

Based on the final deployed smart solutions, SCPI firm will:

- Prepare and execute complete capacity building and related change management plans that will include at least following set of activities
  - ✓ The SCPI Firm shall review the existing roles and responsibilities of the relevant departments (end users), reporting lines, staff levels, job descriptions, and qualification requirements.
  - ✓ The SCPI Firm shall conduct training-needs assessment covering all aspects of deployed smart solutions.
  - ✓ The SCPI Firm shall develop a detailed plan on processes that have undergone changes / modification due to implementation of smart solution details on change /modifications, new processes that are introduced etc.
  - ✓ The SCPI firm shall in coordination with the Client
  - ✓ , MCs and other stakeholders, establish a Smart Solutions Training & Change Management Action Plan whereby end users of the smart solutions will be provided complete trainings of the new processes, required updating of skills and smart solutions

## **Deliverables**

- i. **Capacity Building and Change Management Plan**
- ii. **Periodic Institutional Development Report** highlighting the results and issues of the tasks

## **Task 2: Monitoring the O&M**

### **List of Activities:**

For at least 6 months after the deployment of the smart solutions (both in-house and through SIs), the SCPI firm will:

- ✓ Support PICIIP PMU, MCs Sialkot and Sahiwal, relevant departments for monitoring of the compliance of the contractual obligations of SIs.
- ✓ Monitor the operations and maintenance of the overall system as per the standards and requirements defined for in-house or SI based smart solutions deployment, including but not limited to resolution of issues, availability of the system, updating hardware or system software etc.
- ✓ Ensure that the SLAs and performance levels defined (both in house or SI based deployment) are met as agreement. The SCPI shall review the SLA performance, capacity and effectiveness of the helpdesk set up by the SI.

## **Deliverables**

Periodic Smart Solutions and Related Systems Performance Report



**Table 2: List of key and non-key experts – positions and person months**

Sr. No.	Expert	Number of positions	Person month	Quantity
<b>I.</b>	<b>Key experts</b>			
<b>A</b>	<b>International staffing</b>			
1	Urban Management/Smart City Specialist (Team Leader)	1	12	12
2	Data Center specialist and. (Team Lead)	1	6	6
3	BPR Specialist/Lead	1	3	3
4	Infrastructure Expert	1	6	6
5	IT Experts (Including IOT based Smart Water Management specialist)	2	6	12
6	Capacity Building Expert	1	3	3
7	PPP Expert	1	3	3
<b>B</b>	<b>National staffing</b>			
1	Urban Management Specialist (Deputy Team Leader)	1	24	24
2	Software/Applications Developers	3	12	36
3	Local Governance/ Municipal Services Specialist (Deputy Lead)	1	18	18
4	IT specialist	1	12	12
5	Resident Engineer	1	12	12
6	Architect	1	3	3
7	BPR Specialist- Deputy Lead	1	6	6
8	Database developer - Deputy Lead	1	12	12
9	GIS Expert	1	6	6
10	Project Management Specialist	1	18	18
11	Survey & Feasibility study specialist	1	6	6
<b>C.</b>	<b>Non key experts – national</b>			
1	Administration Expert	1	18	18
2	M&E Expert	1	12	12
3	Procurement/Contract Expert	1	12	12
4	Financial Management Expert	1	18	18

5	Communication and Marketing Expert	1	6	6
<b>D.</b>	<b>Office Support Staff</b>			
1	Office Manager	1	18	18
2	Admin & Accounts Assistant	1	12	12
3	IT Assistants	1	12	12
4	Office caretaker	1	12	12
5	Guards	2	18	18
6	Drivers	1	6	6
<b>Total Person Months</b>				

18. The personnel requirements against each output are estimated in Table 3 below:

**Table 3: Estimated involvement against specific output**

Positions/Output/Person Months	Output A	Output B	Output C	Output D	Total
<b>Duration</b>	<b>24 months</b>	<b>6 months</b>	<b>12 months</b>	<b>6 months</b>	<b>24</b>
Person month of each position in each output stage					
<b>I. Key experts</b>					
<b>A. International Staffing</b>					
Urban Management/Smart City Specialist (Team Leader)	12	6	6	0	12
Data Center specialist and. (Thematic Lead)	6	3	3	0	6
BPR Specialist/Lead	3	0	0	0	3
Infrastructure Expert	6	1	5	0	6
IT Experts ( Including IOT based Smart Water Management specialist) (X2)	12	5	5	2	12
Capacity Building Expert	3	0	0	3	3
PPP Expert	3	3	0	0	3



Total					45
<b>B. National Staffing</b>					
Urban Management Specialist (Deputy Team Leader)	24	6	12	6	24
Software/Applications Developers (x3)	36	12	20	4	36
Local Governance/ Municipal Services Specialist (Deputy Lead)	18	6	12	0	18
IT Specialist	12	6	3	3	12
Resident Engineer	12	3	9	0	12
Architect	3	3	0	0	3
BPR Specialist- Deputy Lead	6	6	0	0	6
Database developer - Deputy Lead	12	3	7	2	12
GIS Expert	6	3	3	0	6
Project Management Specialist	18	5	12	1	18
Survey & Feasibility Study Specialist	6	6	0	0	6
Total					153
<b>II. Non key experts - national</b>					
Administration Expert	18	6	12	0	18
M&E Expert	12	2	8	2	12
Procurement Expert	12	3	8	1	12

Financial Management Expert	18	6	12	2	18
Communication and Marketing Expert	6	3	3	0	6
Total					66
<b>Person Month Inputs</b>	<b>264</b>	<b>97</b>	<b>140</b>	<b>26</b>	<b>264</b>
	<b>100%</b>	<b>37%</b>	<b>53%</b>	<b>10%</b>	

24 months is total duration and Output A will continue throughout the project cycle. The distribution of output A time duration is spread between Output B, C & D

Positions	Preferred Qualification	Job Description
<b>Key - Staff / International</b>		
Urban Management / Smart City Specialist (Team Lead)	<ul style="list-style-type: none"> <li>• Graduate in Urban Planning, Civil Engineering and Post Graduate in Business Administration from reputed institute with 15 years' experience in implementation of urban infrastructure projects for cities with specific 5-7 years of experience in Smart City projects</li> <li>• Demonstrated working and project experience in relevant areas of PICIIP projects e.g., water management, solid waste management system, MCs services etc.</li> <li>• Specialization in IT/implementation of smart solutions in IT field will be a must</li> <li>• Should have implementation experience in the</li> </ul>	<ul style="list-style-type: none"> <li>• Overall project management and administration for the consulting assignment.</li> <li>• Lead and manage all the activities and tasks and submission of deliverables detailed under the various project outputs under the scope of work</li> <li>• of this assignment.</li> <li>• Responsible for overall management and administration of the project components during design and implementation of Smart City Solutions and Smart City Integrated Command &amp; Control Center (IS4) and selected Smart Solutions</li> <li>• Advice on procurement and bidding process</li> <li>• Construction supervision, quality monitoring, contract management;</li> <li>• Establishment of Management and Project Performance</li> <li>• Monitoring and Reporting System;</li> <li>• Provide technical and managerial lead on the assessment of requirements and development the Smart City Solutions and Smart City Integrated Command &amp; Control Center (IS4)</li> <li>• Manage detailed institutional assessments and comparative analysis of available ISC4 models to recommend lead deployment an optimum model to be implemented in Sialkot &amp; Sahiwal</li> <li>• Manage the assessment of the potential integration and interoperability of existing digital solutions in the envisaged Smart City Command &amp; Control Center</li> <li>• Lead discussions with stakeholders and reach consensus among them to design, develop, and approve all necessary functional requirements,</li> <li>• procedures, and institutional arrangements.</li> </ul>

	<p>capacity of Team Leader/Project</p> <ul style="list-style-type: none"> <li>• Manager or Project Director for at least 3 large scale Urban Development projects</li> <li>• Good experience in leading the team.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop and design comprehensive business and operational plans to achieve the set targets to implement ISC4 model and selected Smart Solutions</li> <li>• Identify institutional, management, organizational, and financial structure for the recommended Smart City solutions and ISC4</li> <li>• Lead the development of financial, HR sustainability models and mechanism for the services and operations of ISC4 and recommended smart solutions</li> <li>• Review the potential investments for the sustainability of the ISC4 and related smart solutions</li> <li>• Build the capacity of the MCs to manage the operations of ISC4 and smart solutions</li> <li>• Manage and integrate input of specialist consultants and all other team members for the formulation of institutional systems and mechanisms to develop and deploy ISC4 and Smart solutions</li> <li>• Preparation of Progress as well as Project Completion Report;</li> <li>• Scheduling and ensuring timely mobilization/ demobilization of team members.</li> <li>• To monitor overall implementation of Smart City project and requirements of the consulting assignment</li> <li>• Coordination between the project stakeholders</li> <li>• Any other relevant activities as and when required and agreed by the client <b>All other relevant activities mentioned in the TORs</b></li> </ul> <p>Any other relevant activities as and when required and agreed by the client</p>
Data Center Specialist	<ul style="list-style-type: none"> <li>▪ Bachelor’s degree (16 Years) in Computer Sciences, IT, Software, Engineering, Telecom, Electrical, Electronics or a relevant discipline.</li> <li>▪ A minimum of 7-10 years of work</li> </ul>	<ul style="list-style-type: none"> <li>• Perform basic, intermediate and advanced data center functions. Performs advanced, expert-level troubleshooting and resolution of Data Center infrastructure problems. May administratively supervises assigned support staff, overseeing/inspecting their work as well as the work performed on maintenance or repair issues or outside vendors.</li> </ul>

	<p>experience in IT sector with demonstrated complete project experience in Networks, System and Data Center.</p> <ul style="list-style-type: none"> <li>▪ Experience of at least 2-3 complete design and deployment of Data Center.</li> <li>▪ Data Center Training / Certifications (ATD, ATS) is highly advantageous</li> </ul>	<ul style="list-style-type: none"> <li>• Read and comprehend technical information relating to the Data Center infrastructure, hardware, software, peripherals and telecommunication devices.</li> <li>• Ability to configure and troubleshoot the network and system devices, i.e., Router, Switches, Firewall, Load Balancer, Servers, Storage or any other device.</li> <li>• Use monitoring systems to identify problems or issues with the Data Center infrastructure.</li> <li>• Accurately log and report issues and problems following standard procedures.</li> <li>• Effectively communicate, orally and in writing.</li> <li>• Troubleshoot problem issues following processes and procedures, as directed.</li> <li>• Inspect equipment visually and listening for mechanical problems; report findings as directed.</li> <li>• Interpret processes, flow charts, building plans and schematics.</li> <li>• Work individually or on group projects, as assigned.</li> <li>• Provide customer services to Information Technology staff and/or contractors.</li> <li>• Maintain training on new or revised policies, processes and procedures for the Data Center.</li> <li>• Provide on-call rotational coverage at the Data Center.</li> <li>• Work as a team member in a cooperative work environment.</li> <li>• <b>All other relevant activities mentioned in the TORs</b></li> <li>• Any other relevant activities as and when required and agreed by the client</li> </ul>
BPR Specialist	<ul style="list-style-type: none"> <li>▪ Master degree in Business Administration, Management sciences, Social Sciences relevant discipline.</li> <li>▪ A minimum of 10 years of work experience in the BPR projects, preferably in the IT applications and technology</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct the resource, process and operational assessment of the MCs that need to be transformed in One Stop Window Operations</li> <li>• Map and consolidate 'As is' processes of MCs in Sialkot &amp; Sahiwal</li> <li>• Map the relevant policies, SOPs and procedures that are relevant to the MCs mandate and functions that need to be integrated in the One Stop Window Operations</li> <li>• Provide a complete As is Mapping report</li> </ul>

	<p>projects in Government sector</p> <ul style="list-style-type: none"> <li>▪ Prior BPR experience in Government/public sector is highly desirable</li> </ul>	<ul style="list-style-type: none"> <li>• Map and consolidate a complete 'to be' processes that will provide the foundation of technical and functional requirements/design document for ISC4, One Stop Smart Window Operations and other smart solutions</li> <li>• Provide a complete change management, communication and overall capacity building requirement &amp; Execution plan for MCs to acquire and sustain operations of ISC4 &amp; Smart solutions</li> <li>• Develop and submit a complete BPR report covering all deliverables mentioned above</li> <li>• <b>All other relevant activities mentioned in the TORs</b></li> <li>• Any other relevant activities as and when required and agreed by the client</li> </ul>
Infrastructure Expert	<ul style="list-style-type: none"> <li>• Degree in Civil Engineering or Construction Management from reputed institute.</li> <li>• Should have relevant expertise of Construction Supervision &amp; successful completion of at least 3 multidisciplinary infrastructure projects in urban areas</li> <li>• Experience of working with international organization will be advantages</li> <li>• Should have 15 years' experience in similar field</li> </ul>	<ul style="list-style-type: none"> <li>• Responsible for overall construction management, quality assurance and administration of the contracts under the project, particularly for ISC4 and related smart solutions</li> <li>• Supervise the construction activity appropriately, implementation of work as per design;</li> <li>• Contract management and Performance Monitoring of the contractors</li> <li>• Prepare a construction supervision schedule with timing and resources identified;</li> <li>• Monitor the construction method by assessing the adequacy of the contractors input materials, labour, equipment and construction methods;</li> <li>• Furnish the detailed construction drawings as necessary during continuance of the contract;</li> <li>• Prepare mechanism and assist in third party inspections, if necessary, as decided by Client;</li> <li>• Assist the Client in interim and final certification of the bills of payment;</li> <li>• Assist the Client in issue of completion certificates.</li> </ul>

		<ul style="list-style-type: none"> <li>• Support in preparing Project Completion Report and progress reports</li> <li>• Resolve contractual issue during implementation</li> <li>• To assist Client in implementation of Smart City Implementation</li> <li>• To coordinate between Client, MCs and other stakeholders on matters related to infrastructure development</li> <li>• <b>All other relevant activities mentioned in the TORs</b></li> <li>• Any other relevant activities as and when required and agreed by the client</li> </ul>
<p>IT Expert (including IOT based smart water management specialist)</p>	<ul style="list-style-type: none"> <li>▪ Bachelor’s degree in Computer Sciences, IT, AI or a relevant discipline.</li> <li>▪ A minimum of 10 years of work experience in IT sector with demonstrated complete project experience in IOT based systems.</li> <li>▪ Experience of at least 2-3 complete design and deployment of IOT based water management system and/or smart water management system.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify the IT needs and requirement of the water quality and quantity management system covered by the PICIIP</li> <li>• Develop a framework for the IOT based enterprise system to be used by the new municipal services companies.</li> <li>• Based on the various institutional arrangements (proposed options i.e., private sector involvement through PPP, outsourcing some of the municipal service(s), or creation of municipal services companies), propose an integrated solution for automation of the functional areas and operations of the municipal services delivery.</li> <li>• Prepare a scoping document in consultation with the stakeholders, outlining the overall scope of the IOT based water management system, modules, reporting, and system security etc.</li> <li>• Ensuring that the scoping document will also analyze the possibility of using the existing IOT based Water Management systems available and tailoring for specific operational needs.</li> <li>• Develop a complete technical and functional requirement documents to design and implement IOT based water management system</li> <li>• Establish the resource requirements such as hardware, software, human resources, finance etc.</li> <li>• Propose an optimum Enterprise Architecture for IOT based smart solution for water management, also taking into consideration the integration and standardization requirements of the municipal services companies’ operating model</li> </ul>

		<ul style="list-style-type: none"> <li>• Providing lead technical role to design, develop, procure necessary equipment, complete implementation of IOT based water management system and providing quality assurance at each stage of the project</li> <li>• All other relevant activities mentioned in the TORs</li> <li>• Any other relevant activities as and when required and agreed by the client</li> </ul>
Capacity Building Expert	<ul style="list-style-type: none"> <li>▪ Master degree in Business Administration, IT, MIS or a relevant discipline.</li> <li>▪ A minimum of 10 years of work experience in the Capacity Building, preferably in the IT applications and technology projects in Government sector</li> <li>▪ Prior capacity building experience in Government/public sector is highly desirable</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct Capacity Building Needs Assessment for MCs to acquire the skills and capacities to institutionalize and manage ISC4 and smart solutions</li> <li>• Provide a complete capacity building plan for MCs</li> <li>• Conduct Capacity building programme to capacitate MCs and related stakeholders to manage and sustain operations of ISC4 &amp; Smart Solutions</li> <li>• Any other relevant activities as and when required and agreed by the client</li> </ul>
PPP Expert	<ul style="list-style-type: none"> <li>▪ Master degree in Business Administration, Finance or a relevant discipline.</li> <li>▪ A minimum of 10 years of work experience in the areas of PPP promotion and management, preferably related to Urban Services</li> <li>▪ Prior experience in the area of PPP for IT applications, one stop window operations, Command &amp; Control Centers is highly desirable</li> <li>▪ Prior experience in assessing and developing PPP</li> </ul>	<ul style="list-style-type: none"> <li>• Review any PPP arrangements currently in place and provide input on their utility and efficiency.</li> <li>• Assist in evaluating various PPP models and provide recommendations for potential PPP mechanism to be incorporated in Smart City Initiative</li> <li>• Facilitate detailed market assessment to cover PPP opportunities and scope of partnerships, anticipated business opportunities, and operational risks and external factors which may influence performance of Smart City initiative and related interventions like ISC4 &amp; Smart Solutions</li> <li>• Develop PPP investment engagement strategy and PPP development plan.</li> <li>• Identify resources, processes, equipment and skill requirements for the implementation of these plans in a phased approach.</li> </ul>



	<p>mechanism for government sector is highly desirable</p> <ul style="list-style-type: none"> <li>▪ Prior experience ADB or other international donor-funded project implementation experience would be an added advantage</li> </ul>	<ul style="list-style-type: none"> <li>• Provide technical input to institutional systems through policies, procedures, tools and trainings pertaining to investor coordination and engagement and reporting and marketing system</li> <li>• All other relevant activities mentioned in the TORs</li> <li>• Any other relevant activities as and when required and agreed by the client</li> </ul>
<b>Key - Staff / National</b>		
<p>Urban Management Specialist (Deputy Team Leader)</p>	<ul style="list-style-type: none"> <li>• Graduate in Urban Planning, Civil Engineering and Post Graduate in Business Administration from reputed institute with 7-10 years</li> <li>• experience in implementation of urban infrastructure projects for cities with specific 3-5 years of experience in IT implementation and/or digital projects in IT field will be highly desirable</li> <li>• Demonstrated working and project experience in relevant areas of PICIIP projects e.g., water management, solid waste management system, MCs services etc.</li> <li>• Good experience in leading the team.</li> </ul>	<p>Assist the Team Leader in:</p> <ul style="list-style-type: none"> <li>• Overall project management and administration for the consulting assignment.</li> <li>• Lead and manage all the activities and tasks and submission of deliverables detailed under the various project outputs under the scope of work</li> <li>• of this assignment.</li> <li>• Responsible for overall management and administration of the project components during design and implementation of Smart City Solutions and Smart City Integrated Command &amp; Control Center (IS4) and selected Smart Solutions</li> <li>• Advice on procurement and bidding process</li> <li>• Construction supervision, quality monitoring, contract management;</li> <li>• Establishment of Management and Project Performance</li> <li>• Monitoring and Reporting System;</li> <li>• Provide technical and managerial lead on the assessment of requirements and development the Smart City Solutions and Smart City Integrated Command &amp; Control Center (IS4)</li> <li>• Manage detailed institutional assessments and comparative analysis of available ISC4 models to recommend lead deployment an optimum model to be implemented in Sialkot &amp; Sahiwal</li> <li>• Lead discussions with stakeholders and reach consensus among them to design, develop, and approve all necessary functional requirements,</li> </ul>

		<ul style="list-style-type: none"> <li>• procedures, and institutional arrangements.</li> <li>• Develop and design comprehensive business and operational plans to achieve the set targets to implement ISC4 model and selected Smart Solutions</li> <li>• Identify institutional, management, organizational, and financial structure for the recommended Smart City solutions and ISC4</li> <li>• Lead the development of financial, HR sustainability models and mechanism for the services and operations of ISC4 and recommended smart solutions</li> <li>• Review the potential investments for the sustainability of the ISC4 and related smart solutions</li> <li>• Build the capacity of the MCs to manage the operations of ISC4 and smart solutions</li> <li>• Manage and integrate input of specialist consultants and all other team members for the formulation of institutional systems and mechanisms to develop and deploy ISC4 and Smart solutions</li> <li>• Preparation of Progress as well as Project Completion Report;</li> <li>• Scheduling and ensuring timely mobilization/ demobilization of team members.</li> <li>• To monitor overall implementation of Smart City project and requirements of the consulting assignment</li> <li>• Coordination between the project stakeholders</li> <li>• <b>All other relevant activities mentioned in the TORs</b></li> <li>• Any other relevant activities as and when required and agreed by the client</li> </ul>
<p>Software/Applications Developers</p>	<ul style="list-style-type: none"> <li>▪ Bachelor’s degree (16 Years) in Computer Sciences, IT, Software, Engineering, Telecom or a relevant discipline.</li> </ul>	<ul style="list-style-type: none"> <li>• Under the supervisor of International and National IT experts and to fulfill the requirements for ISC4 and Smart Solutions, Software developers will</li> <li>• Develop intuitive software that meets and exceeds the needs to design and develop smart solutions/applications as well as software applications for ISC4</li> </ul>

	<ul style="list-style-type: none"> <li>▪ A minimum of 7-10 years of work experience in IT sector with demonstrated complete project experience in Software development.</li> </ul>	<ul style="list-style-type: none"> <li>• Collaborate with team members to determine best practices and client requirements for software to design and develop smart solutions/applications as well as software applications for ISC4</li> <li>• Professionally maintain all software and create updates regularly to address customer and company concerns for to design and develop smart solutions/applications</li> <li>• Analyze and test programs and products before formal launch</li> <li>• Troubleshoot coding problems quickly and efficiently to ensure a productive workplace</li> <li>• Ensure software security by developing programs to actively monitor the sharing of private information</li> <li>• Actively seek ways to improve business software processes and interactions</li> <li>• Aid and support the coaching and training of other team members to ensure all employees are confident in the use of software applications</li> <li>• Experience working on large-scale software projects</li> <li>• Professional experience using cybersecurity and open-source technology</li> <li>• Experience developing software utilizing various coding languages including Java, .Net, C++, PHP and more</li> <li>• Outstanding collaboration and communication skills are essential</li> <li>• Experience developing secure software systems based upon industry specifications</li> <li>• Analyze code for weaknesses and errors, and present detailed plans to improve them</li> <li>• Experience developing customized code for multiple projects simultaneously</li> <li>• All other relevant activities mentioned in the TORs</li> <li>• Any other relevant activities as and when required and agreed by the client</li> </ul>
Local Governance/ Municipal Services Specialist	Master degree in Urban Planning, Municipal Engineering & Operations or a relevant discipline.	<ul style="list-style-type: none"> <li>• Support the International Consultants and overall team in providing technical knowledge and inputs on the relevant municipal systems to be transformed into smart solutions and included in the scope of the project.</li> </ul>

	<p>A minimum of 10 years of work experience in urban infrastructure and municipal services preferably related to water supply and SWM services.</p> <p>Expertise in water supply (including drinking water) as well as integrated city planning would be preferred.</p> <p>Experience with municipal services providers would be preferred.</p>	<ul style="list-style-type: none"> <li>• Provide Team lead with the relevant expert knowledge and inputs on functions and mechanisms of MCs in Sialkot and Sahiwal</li> <li>• Assist and coordinate for situation analysis to understand existing conditions and future planning.</li> <li>• Assist the team in evaluating feasible and appropriate solutions, mechanisms and processes to institutionalize smart city solutions in MCs and other relevant stakeholders.</li> <li>• Provide input on the recommended smart city solutions' designing, developing, implementation and post implementation phases</li> <li>• Assist BPR and capacity building specialists in conducting BPR and training activities mentioned above</li> <li>• Provide technical input to institutional systems through policies, procedures, tools and trainings pertaining to the systems to be transformed into smart solutions such as a) Water supply &amp; management b. Solid waste management e. Improved service delivery f. Monitoring and reporting systems g. Performance standardization and management system etc.</li> </ul>
IT Specialist	<ul style="list-style-type: none"> <li>• Must possess a master's or advanced degree in Software engineering, ICTs, MIS or other closely related fields.</li> <li>• Preferably have 7-10 years of specific experience in ICT networks and equipment deployment</li> <li>• Prior experience in conducting quality</li> </ul>	<p>Assist International IT Expert in:</p> <ul style="list-style-type: none"> <li>• Development of the technical functional requirements and smart solutions design documents and provide the ICT related technical input;</li> <li>• Support and assist in the procurement, Installation/deployment, necessary hardware, Software and other equipment that will be procured by the SCPI firm for both Smart City Command &amp; Control Center and the smart city solutions deployments;</li> <li>• Provide technical support and quality assurance of the technical deployment of ICT infrastructure and protocols for the Smart City Command and Control Centers in the selected cities as per the TORs and to ensure that international best practices and standards are met</li> </ul>

	<p>assurances of Networks and System is a must</p> <ul style="list-style-type: none"> <li>• Prior experience in configuration of system, Networks, server and storage.</li> <li>• Prior Experience of a large-scale ICT/Smart solutions/ ERP solutions/M&amp;E systems project in Government Sector is highly desirable.</li> <li>• Network Certification (CCNA, CCNP, MCSE) is highly advantageous</li> </ul>	<ul style="list-style-type: none"> <li>• Develop and/or provide technical support in the development of ICT architecture, requirements and documents for the required data center mechanism for the Smart City initiative;</li> <li>• Provide support in the potential integration and interoperability of existing digital solutions in the envisaged Smart City Command &amp; Control Center</li> <li>• Ensure quality assurance of the software/application development for all the selected smart solutions</li> <li>• Assist in Setting up and/or review Smart Solutions test conditions and parameters;</li> <li>• Assist in Pre-Live Quality Assurance and Testing Audit of the smart solutions including application audit, Review of Network and Website, Review and Implement of Security Policies and Controls</li> <li>• Provide support and quality assurance in the Planning, preparing &amp; execution of the User Acceptance Test</li> <li>• Conducting quality assurance review of the Go-live phase of the smart city implementation</li> <li>• Installing new software and hardware components.</li> <li>• Ability to configure and troubleshoot the network and system devices, i.e., Router, Switches, Firewall, Load Balancer, Servers, Storage or any other device.</li> <li>• Regularly evaluating our IT systems to ensure they meet the necessary demands.</li> <li>• Assisting with network administration tasks.</li> <li>• Ensuring data storage is safe and secure.</li> </ul>
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		<ul style="list-style-type: none"> <li>• Resolving all issues coworkers have with their IT systems and software.</li> <li>• Supporting the day-to-day operations of our computer network.</li> <li>• Provide expertise to the design, configuration, implementation, operation, and security of network systems</li> <li>• Serve as technical expert for complex systems and identify solutions to issues and system/service interruption</li> <li>• Lead and/or provide technical guidance to staff and teams</li> <li>• Lead and oversee departmental projects; build and maintain project management skills</li> <li>• Develop processes and procedures for design, maintenance, and operation of networks to ensure consistent and reliable operation to meet the business needs</li> <li>• Participate in the architecture and design of network systems</li> <li>• Evaluate potential equipment, components, and software; analyze the cost/benefit of emerging technology</li> <li>• Investigate and analyze network requirements and develop specifications</li> <li>• Design and perform major upgrades to installed network systems</li> <li>• Manage, research, and resolve complex user escalation incidents</li> <li>• Provide oversight and management for new or existing systems, upgrades, and maintenance</li> <li>• Manage vendor relationships; consult with vendors to resolve issues.</li> <li>• <b>All other relevant activities mentioned in the TORs</b></li> <li>• Any other relevant activities as and when required and agreed by the client</li> </ul>
Resident Engineer (RE)	<p>Degree in Civil Engineering or Construction Management from reputed institute.</p> <p>Should have relevant expertise of</p>	<p>Assist Infrastructure specialist in:</p> <ul style="list-style-type: none"> <li>• Overall construction management, quality assurance and administration of the contracts under the project, particularly for ISC4 and related smart solutions</li> <li>• The construction activity appropriately, implementation of work as per design;</li> </ul>

	<p>Construction Supervision &amp; successful completion of at least 3 multidisciplinary infrastructure projects in urban areas</p> <p>Experience of working with international organization will be advantages</p> <p>Should have 15 years' experience in similar field</p>	<ul style="list-style-type: none"> <li>• Contract management and Performance Monitoring of the contractors</li> <li>• Prepare a construction supervision schedule with timing and resources identified;</li> <li>• Monitoring the construction method by assessing the adequacy of the contractors input materials, labour, equipment and construction methods;</li> <li>• Furnishing the detailed construction drawings as necessary during continuance of the contract;</li> <li>• Preparing mechanism and assist in third party inspections, if necessary, as decided by Client;</li> <li>• Assisting the Client in interim and final certification of the bills of payment;</li> <li>• Assisting the Client in issue of completion certificates.</li> <li>• Supporting in preparing Project Completion Report and progress reports</li> <li>• Resolving contractual issue during implementation</li> <li>• Assisting the Client in implementation of Smart City Implementation</li> <li>• Coordinating between Client, MCs and other stakeholders on matters related to infrastructure development</li> <li>• <b>All other relevant activities mentioned in the TORs</b></li> <li>• Any other relevant activities as and when required and agreed by the client</li> </ul>
Architect	<p>Graduate in Architecture</p> <p>Should have a minimum 5 years of Experience</p> <p>Should have worked on relevant area of expertise in at-least 2 relevant projects</p>	<ul style="list-style-type: none"> <li>• Responsible for development of architectural features for Integrated Smart City Command &amp; Control Center &amp; One stop Smart City window operations for MCs</li> <li>• <b>All other relevant activities mentioned in the TORs</b></li> <li>• Any other relevant activities as and when required and agreed by the client</li> </ul>
BPR Specialist – Deputy Lead	<ul style="list-style-type: none"> <li>▪ Master degree in Business Administration, Management</li> </ul>	<p>Assisting in the overall design, development and implementation of the required BPR process that include</p>

	<p>sciences, Social Sciences relevant discipline.</p> <ul style="list-style-type: none"> <li>▪ A minimum of 5-7 years of work experience in the BPR projects, preferably in the IT applications and technology projects in Government sector</li> <li>▪ Prior BPR experience in Government/public sector is highly desirable</li> </ul>	<ul style="list-style-type: none"> <li>• Conducting the resource, process and operational assessment of the MCs that need to be transformed in One Stop Window Operations</li> <li>• Mapping and consolidating 'As is' processes of MCs in Sialkot &amp; Sahiwal</li> <li>• Mapping the relevant policies, SOPs and procedures that are relevant to the MCs mandate and functions that need to be integrated in the One Stop Window Operations</li> <li>• Providing a complete as is Mapping report</li> <li>• Mapping and consolidate a complete 'to be' processes that will provide the foundation of technical and functional requirements/design document for ISC4, One Stop Smart Window Operations and other smart solutions</li> </ul>
<p>Database Developer – Deputy Lead</p>	<ul style="list-style-type: none"> <li>▪ Bachelor's degree (16 Years) in Computer Sciences, IT, Software, Engineering, Telecom or a relevant discipline.</li> <li>▪ A minimum of 7-10 years of work experience in IT sector with demonstrated complete project experience in Database development.</li> <li>▪ Database Certification is highly advantageous</li> </ul>	<ul style="list-style-type: none"> <li>• Design, develop and implement database systems based on customer requirements.</li> <li>• Optimize database systems for performance efficiency.</li> <li>• Prepare design specifications and functional documentations for assigned database projects.</li> <li>• Perform space management and capacity planning for database systems.</li> <li>• Develop database tables and dictionaries.</li> <li>• Ensure data quality and integrity in databases.</li> <li>• Identify any issues related to database performance and provide corrective measures.</li> <li>• Create complex functions, scripts, stored procedures and triggers to support application development.</li> <li>• Participate in database design and architecture to support application development projects.</li> <li>• Perform data back-up and archival on regular basis.</li> <li>• Test databases and perform bug fixes.</li> <li>• Troubleshoot database related issues in a timely fashion.</li> <li>• Develop security procedures to protect databases from unauthorized usage.</li> <li>• Evaluate existing database and recommend improvements for performance efficiency.</li> <li>• Develop best practices for database design and development activities.</li> <li>• X years of experience with programming languages such PL/SQL coding</li> </ul>



		<ul style="list-style-type: none"> <li>• Easily design and implement a business process into functional and efficient code</li> <li>• Implement and manage company data management practices and policies</li> <li>• experience in administering, managing and tuning databases</li> <li>• experience with Oracle RAC, SQL Server or MySQL</li> <li>• Good understanding of data and schema standards and concepts</li> <li>• Good understand database design, implementation, troubleshooting and maintenance</li> <li>• Expertise in SQL</li> <li>• <b>All other relevant activities mentioned in the TORs</b></li> <li>• Any other relevant activities as and when required and agreed by the client</li> </ul>
GIS Expert	<ul style="list-style-type: none"> <li>▪ Bachelor’s degree (16 Years) in Computer Sciences, IT, Software, Engineering, Telecom or a relevant discipline.</li> <li>▪ A minimum of 7-10 years of work experience in IT sector with demonstrated complete project experience in GIS based system</li> </ul>	<ul style="list-style-type: none"> <li>• Carry out situation analysis including developing a GIS database of the existing water, sanitation and solid waste management systems, and other relevant urban services.</li> <li>• Review the available GIS resources, identify gaps, and help procure the appropriate additional hardware and software for maintaining a GIS database.</li> <li>• Develop a GIS-based system of the municipal services facilities, and assets, that will be rolled out across the cities of Sahiwal and Sialkot.</li> <li>• Develop GIS mapping system for the MCs and other relevant utility system currently in place based on the assets data survey and condition assessment and identify plans to integrate it with the MIS system to be proposed for the new urban utility set up in the two cities.</li> <li>• Develop dashboards to ensure that system is capable of providing quick analysis of trends and comparisons against defined performance standards and parameters.</li> <li>• Identify and help procure the appropriate hardware and software for maintaining the GIS-based MIS.</li> <li>• Design, develop and implement systems and databases for geospatial data</li> <li>• Standardize geographic data</li> <li>• Research and conduct tests on new researching tools</li> <li>• Perform geospatial modeling and spatial analysis</li> <li>• Review GIS data for accuracy</li> <li>• Build, update and maintain databases and GIS software and hardware</li> <li>• Administer and troubleshoot applications and GIS solutions</li> </ul>

		<ul style="list-style-type: none"> <li>• All other relevant activities mentioned in the TORs</li> <li>• Any other relevant activities as and when required and agreed by the client</li> </ul>
Project Management Specialist	<ul style="list-style-type: none"> <li>• Master degree in Business Administration, Management sciences, Project Management or relevant discipline.</li> <li>• A minimum of 5-7 years of work experience in the Project Management, preferably in the IT applications and technology projects in the Government sector</li> <li>• Prior PM experience in Government/public sector is highly desirable</li> <li>• Project Management Certification (PMP, Prince 2 etc.) is highly advantageous</li> </ul>	<p>Provide overall specialized project management support to:</p> <ul style="list-style-type: none"> <li>• Develop and manage the implementation plan for the agreed technical and functional designs of the smart solutions</li> <li>•</li> <li>• Co-ordinate Detailed Project Reports (DPRs) submissions/approvals and should be agreed with the client. In case of involving any external system integrator (SI), be responsible for reviewing the deliverables submitted by SI within a period of 2 weeks (or as agreed with PICIIP PMU) from the receipt of that deliverable. SI firm will also not only keep the Client updated about the activities but Client will also directly seek progress updates and/or monitor SI activities</li> <li>•</li> <li>• Highlight deviations/issues in the deliverable's authority within the specified time limits and assist in resolution of issues.</li> <li>•</li> <li>• Ensure that the technology related/IT project management standards, guidelines &amp; frameworks are adhered to during implementation.</li> <li>•</li> <li>• Monitor and maintain the issue tracker and keep on updating the status of all risks and issues from time to time.</li> <li>•</li> <li>• Defining the escalation mechanism for timely resolution of issues &amp; risks.</li> <li>•</li> <li>• Define and implement pre-live quality assurance and technology audit certification.</li> </ul> <p>Overall monitoring of all Service Level Agreements (SLAs) required for the implementation of Smart Solutions</p> <ul style="list-style-type: none"> <li>• Monitoring the performance of against the base project plan</li> </ul>

		<ul style="list-style-type: none"> <li>● Monitoring the performance of the overall system in terms of availability &amp; efficiency against the service levels already defined</li> <li>● Suggest changes in SLAs, if required</li> <li>● Suggest corrective and preventive measures to PICIIP PMU to enhance the performance of the system</li> <li>● Provide the support the Client</li> <li>● and relevant stakeholders for the successful completion of the Smart City Project and its closure.</li> <li>● <b>All other relevant activities mentioned in the TORs</b></li> <li>● Any other relevant activities as and when required and agreed by the client</li> </ul>
<p>Survey &amp; Feasibility Study Specialist</p>	<ul style="list-style-type: none"> <li>● Graduate in civil engineering, urban planning or relevant discipline.</li> <li>● A minimum of 5-7 years of work experience in the Surveys and feasibility study preferably in the IT applications and technology projects in the Government sector</li> <li>● Prior Surveys and feasibility study experience in</li> </ul>	<ul style="list-style-type: none"> <li>● Review the preliminary concept note and basic High Level Functional requirements along with envisaged surveys, investigations and detailed studies of the existing services that various government departments are providing to citizens (automated as well as non-automated).</li> <li>● Conduct site visits, undertake necessary surveys and examine the potential and scope for deploying the intended Smart City Solutions in Sialkot and Sahiwal</li> <li>● Consult the available documents such as city development plans /strategy plans, sanitation plans, and review available relevant feasibility studies etc.</li> <li>● Identify requirements of any quick surveys, studies and investigations</li> </ul>

	<p>Government/public sector is highly desirable</p>	<ul style="list-style-type: none"> <li>● Carry out necessary surveys, investigations, situational analysis, cost benefit analysis, prepare preliminary project cost estimates</li>   <li>● Undertake detailed feasibility assessment studies, including on-ground studies, conduct analysis and calculations based on common rules and benchmarks to ascertain the design of the proposed solutions</li>   <li>● Undertake a comprehensive review of existing documents and studies/DPRs available to establish an information database and all existing other relevant information, reports, data, documents, maps, policies, plans and records pertaining to scope of the Project.</li>   <li>● Prepare a feasibility report on the basis of the necessary and identified surveys conducted</li>   <li>● Based on the approved feasibility report, provide relevant inputs in preparing module wise preliminary/detailed designs report (PDR/DPR) of the selected smart solutions to be deployed as per requirement of the project in accordance with established IT &amp; engineering practices, tender drawings, and cost estimates etc.</li>   <li>● For preparing PDR/DPR and wherever required, the consultant will carry out all the required engineering surveys and investigate such geotechnical investigation, site survey, construction material survey, etc. including sufficient off-site information to allow relationships with possibly usable off-site infrastructure to be established.</li>   <li>● visit the proposed work sites of smart city projects in conjunction with PICIIP technical team and examine the current status, undertake critical evaluation of the existing service condition of facilities, civil structures,</li> </ul>
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		<p>electrical installations etc., identify needs for a structural condition survey and any other relevant investigations.</p> <ul style="list-style-type: none"><li>● Schedule and prioritize the critical surveys in such a way that the required designs can be carried out efficiently and expeditiously pursuant to the implementation of the Project.</li><li>● Identify the requirement for any comprehensive condition assessment and physical evaluation of existing assets related to the projects (if required).</li><li>● <b>All other relevant activities mentioned in the TORs</b></li><li>● Any other relevant activities as and when required and agreed by the client</li></ul>
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<b>S.No</b>	<b>Reports/Deliverables</b>	<b>TimeLine</b>
1	Inception Report	Within 1 month of Commencement
2	Situation Analysis & Diagnostic Study	Within 3 Months
3	Separate 'As-is' maps of all departments, functions and processes and Consolidated 'As-is' maps	Within 3 months
4	Complete Business Process reengineering (BPR) report	Within 4 Months
5	i. Detailed and complete financial and revenue model for each Smart City Project ii. Budget and costing model for each Smart City Project Financial Management and Accounting System	Within 5 months
6	i. Procurement Management Plan/Document	Within 5 Months
7	i. PICIIP's Smart City Initiative's Communication and Public Outreach Strategy ii. Multi Stakeholder based Coordination Mechanism	Within 6 Months
8	Complete Smart Solutions' technical, infrastructure and related feasibility and design reports	Within 6 months
9	Smart Solutions Implementation Plan	Within 6 months
10	Complete and Comprehensive Pre-Live Quality Assurance and Audit Report	Within 13Months of commencement
11	Project Performance Monitoring Information System (PPMIS) for Smart City Solutions	Within 15 months
12	Complete Go-Live Report for all deployed Smart Solutions	Within 15 Months of commencement
13	Capacity Building and Change Management Plan Periodic Institutional Development Report	After Go live (months) Quarterly
14	Periodic Smart Solutions and Related Systems Performance Rep	Monthly after Full deployment
15	Periodic Progress report	Every Month

## Payment Schedule

<b>S. No</b>	<b>Key Milestones</b>	<b>Payment</b>
1	Submission and Approval of the Inception Report	10%
2	Submission and Approval Situation Analysis & Diagnostic Study	10%
3	Submission and Approval of the Complete BPR Report & Smart Solutions Implementation Plan	10%
4	Submission and Approval of the Complete Smart Solutions technical, infrastructure and related feasibility and design reports	25%
5	Submission and Approval of Complete and Comprehensive Pre-Live Quality Assurance and Audit Report (Third Party report if complete Smart Solution is designed in house)	15%
6	Submission and Approval of the Complete Go-Live Report for all deployed Smart Solutions	20%
7	Post Implementation support completion	10%

Task No.	Activities	Months											
		2	4	6	8	10	12	14	16	18	20	22	24
1	<b>Output A: Project Planning and Management</b>												
1.1	Task 1: Inception/Work Plan												
1.2	Task 2: Diagnostic Study, Situation analysis & Stakeholder Consultations (Combined with Output B)												
1.3	Task 3: Financial, Budget and Accounting Management												
1.4	Task 4: Procurement Management												
1.5	Task 5: Project Coordination and Public Outreach												
1.6	Task 6: Development of PPMIS for Smart City Solutions and Linkages of Smart City Solutions to Dashboards												
2	<b>Output B: Smart City Solutions planning and Design (combined with the OUTPUT A, Task 2)</b>												
2.1	Task 1: Mapping As-Is Processes												
2.2	Task 2: To-Be & Requirements Specifications												
2.3	Task 3-Development of Smart Solutions (Functional requirements, Technical Design & Configurations, Technical validation, Defining configuration requirements and implementation modalities)												
3	<b>Output C: Smart City Solutions Implementations Management</b>												



Task No.	Activities	Months											
		2	4	6	8	10	12	14	16	18	20	22	24
3.1	Task 1: Overall Smart City Solutions Implementation Management												
3.2	Task 2: Procurement, Installation/deployment, monitoring and commissioning of necessary hardware, Software and other equip												
3.3	Task 3: Setting up Smart Solution test conditions and parameters												
3.4	Task 4: Pre-Live Quality Assurance and Testing Audit												
3.5	Task 5: UAT and Go-Live Report												
4	<b>Output D: Capacity Building &amp; Institutionalization of Smart City Solutions</b>												
4.1	Task 1: Capacity building of stakeholders on Smart City Solutions												
4.2	Task 2: Monitoring the O&M												



## Loan 3562-PAK: Punjab Intermediate Cities Improvement Project (PICIIP)

### Smart City Planning and Implementation (SCPI) Consulting Firm

#### Input Details

S.No	Position	Key/Non-Key Staff	Positions	P.M	Quantity
<b>Key Staff</b>			<b>24</b>		<b>264</b>
<b>International</b>			<b>8</b>		<b>45</b>
1	Urban Management/Smart City Specialist (Team Leader)		1	12	12
2	Data Center specialist and. (Team Lead)		1	6	6
3	BPR Specialist/Lead		1	3	3
4	Infrastructure Expert		1	6	6
5	IT Experts (Including IOT based Smart Water Management specialist)		2	6	12
6	Capacity Building Expert		1	3	3
7	PPP Expert		1	3	3
<b>National</b>			<b>11</b>		<b>153</b>
1	Urban Management Specialist (Deputy Team Leader)		1	24	24
2	Software/Applications Developers		3	12	36
3	Local Governance/ Municipal Services Specialist (Deputy Lead)		1	18	18
4	IT Specialist		1	12	12
5	Resident Engineer		1	12	12
6	Architect		1	3	3
7	BPR Specialist- Deputy Lead		1	6	6
8	Database developer - Deputy Lead		1	12	12
9	GIS Expert		1	6	6
10	Project Management Specialist		1	18	18
11	Survey & Feasibility Study Specialist		1	6	6
<b>Non-Key Staff - National</b>			<b>5</b>		<b>66</b>
1	Administration Expert		1	18	18
2	M&E Expert		1	12	12

3	Procurement/Contract Expert	1	12	12
4	Financial Management Expert	1	18	18
5	Communication and Marketing Expert	1	6	6
<b>TOTAL</b>				
<b>Office Support Staff</b>				<b>108</b>
1	Office Manager	1	18	18
2	Admin & Accounts Assistant	1	18	18
3	IT Assistants	1	18	18
4	Office caretaker	1	18	18
5	Guards	2	18	36
6	Drivers	1	18	18

**Loan 3562-PAK: Punjab Intermediate Cities Improvement Project (PICIIP)  
Smart City Planning and Implementation (SCPI) Consulting Firm**

**Indicative Inputs (Person Months)**

<b>Positions/Output/Person Months</b>	<b>Output A</b>	<b>Output B</b>	<b>Output C</b>	<b>Output D</b>	<b>Total</b>
Duration	24 months	6 months	12 months	6 months	24
	<b>Person month of each position in each output stage</b>				
<b>I. Key experts</b>					
<b>A. International Staffing</b>					
Urban Management/Smart City Specialist (Team Leader)	12	6	6	0	12
Data Center specialist and. (Thematic Lead)	6	3	3	0	6
BPR Specialist/Lead	3	0	0	0	3
Infrastructure Expert	6	1	5	0	6
IT Experts ( Including IOT based Smart Water Management specialist) (X2)	12	5	5	2	12
Capacity Building Expert	3	0	0	3	3
PPP Expert	3	3	0	0	3
<b>Total</b>					<b>45</b>

<b>B. National Staffing</b>					
Urban Management Specialist (Deputy Team Leader)	24	6	12	6	24
Software/Applications Developers (x3)	36	12	20	4	36
Local Governance/ Municipal Services Specialist (Deputy Lead)	18	6	12	0	18
IT Specialist	12	6	3	3	12

Resident Engineer	12	3	9	0	12
Architect	3	3	0	0	3
BPR Specialist- Deputy Lead	6	6	0	0	6
Database developer - Deputy Lead	12	3	7	2	12
GIS Expert	6	3	3	0	6
Project Management Specialist	18	5	12	1	18
Survey & Feasibility Study Specialist	6	6	0	0	6
<b>Total</b>					<b>153</b>
<b>II. Non key experts - national</b>					
Administration Expert	18	6	12	0	18
M&E Expert	12	2	8	2	12
Procurement Expert	12	3	8	1	12
Financial Management Expert	18	6	12	2	18
Communication and Marketing Expert	6	3	3	0	6
<b>Total</b>					<b>66</b>
<b>Person Month Inputs</b>	<b>264</b>	<b>97</b>	<b>140</b>	<b>26</b>	<b>264</b>
	100%	37%	53%	10%	

24 months is total duration and Output A will continue throughout the project cycle. The distribution of output A time duration is spread between Output B, C & D

**Loan 3562-PAK: Punjab Intermediate Cities Improvement Project (PICIIP)  
Smart City Planning and Implementation (SCPI) Consulting Firm**

**Estimated Cost**

<b>S.No</b>	<b>Position</b>	<b>Total Cost in PKR</b>
<b>A</b>	<b>BUDGET for Outputs A (Planning) and B (Detailed Design)</b>	
I.	Total REMUNERATION	165,441,600
II.	Total - OUT OF POCKET EXPENSES	49,223,600
III.	Total - PROVISIONAL SUM = (i) + (ii)	6,000,000
IV.	Total - CONTINGENCIES = 3% of (I+II+III)	6,619,956
	<b>Total for A i.e. Budget for Outputs A and B ( I + II + III + IV )</b>	<b>227,285,156</b>
	<b>Grand Total for PICIIP-Cons-5A (PKR)</b>	<b>227,285,156</b>
	<b>Grand Total for PICIIP-Cons-5A (\$ Million)</b>	<b>1.48</b>

## Loan 3562-PAK: Punjab Intermediate Cities Improvement Project (PICIIP)

### Smart City Planning and Implementation (SCPI) Consulting Firm

#### Estimated Cost

S.No	Position	Key/Non-Key Staff	Nature	Unit	Positions	P.M	Quantity	Unit cost in USD	Unit cost in PKR	Total Cost in PKR
<b>I.</b>	<b>REMUNAERATION</b>							USD=	154	
<b>A.</b>	<b>KEY STAFF</b>									
<b>a.</b>	<b>International Staffing</b>									
1	Urban Management/Smart City Specialist (Team Leader)		Intermittent		1	12	12	15,400	2,371,600	28,459,200
2	Data Center specialist (Team Lead)		Intermittent		1	6	6	13,200	2,032,800	12,196,800
3	BPR Specialist/Lead		Intermittent		1	3	3	13,200	2,032,800	6,098,400
4	Infrastructure Expert		Intermittent		1	6	6	13,200	2,032,800	12,196,800
5	IT Experts (Including Expertise in IOT based Smart Water Management specialist)		Intermittent		2	6	12	13,200	2,032,800	24,393,600
6	Capacity Building Expert		Intermittent		1	3	3	13,200	2,032,800	6,098,400



7	PPP Expert		Intermittent		1	3	3	13,200	2,032,800	6,098,400
<b>b.</b>	<b>National Staffing</b>									
1	Urban Management Specialist (Deputy Team Leader)		Continuous		1	24	24		500,000	12,000,000
2	Software/Applications Developers		Intermittent		3	12	36		200,000	7,200,000
3	Local Governance/ Municipal Services Specialist (Deputy Lead)		Continuous		1	18	18		400,000	7,200,000
4	IT Specialist		Intermittent		1	12	12		300,000	3,600,000
5	Resident Engineer		Intermittent		1	12	12		400,000	4,800,000
6	Architect		Intermittent		1	3	3		300,000	900,000
7	BPR Specialist- Deputy Lead		Intermittent		1	6	6		300,000	1,800,000
8	Database developer - Deputy Lead		Intermittent		1	12	12		300,000	3,600,000
9	GIS Expert		Intermittent		1	6	6		300,000	1,800,000
10	Project Management Specialist		Continuous		1	18	18		300,000	5,400,000
11	Survey & Feasibility Study Specialist		Intermittent		1	6	6		300,000	1,800,000
<b>iii.</b>	<b>NON-KEY EXPERTS - NATIONAL</b>									-
1	Administration Expert		Continuous		1	18	18		300,000	5,400,000
2	M&E Expert		Intermittent		1	12	12		300,000	3,600,000

3	Procurement/Contract Expert		Intermittent		1	12	12		300,000	3,600,000
4	Financial Management Expert		Intermittent		1	18	18		300,000	5,400,000
5	Communication and Marketing Expert		Intermittent		1	6	6		300,000	1,800,000
<b>I.</b>	<b>Total REMUNERATION</b>						<b>264</b>			<b>165,441,600</b>
<b>II.</b>	<b>OUT OF POCKET EXPENSES</b>									
1	Per Diem (International Consultants)			Daily			990	110	16,940	16,770,600
2	Air Tickets (International)			lump sum			15	-	200,000	3,000,000
3	Per Diem (National Consultants)			Daily			600	-	5,000	3,000,000
4	Vehicle: 1300 Cc (Rent with Driver) including insurance					18	1	-	120,000	2,160,000
5	POL					18	1	-	53,500	963,000
6	Office Furniture			lump sum				-		1,000,000
7	IT Equipment			lump sum				-		1,000,000
8	Office rent/utilities					18	1	-	500,000	9,000,000
9	Communication/Reports/Stationary					18	1		400,000	7,200,000
10	<b>Support Staff</b>									
i	Office Manager	Support Staff	continous	person months	1	18	18	-	75,000	1,350,000

iii.	Admin & Accounts Assistant	Support Staff	continous	person months	1	18	18	-	50,000	900,000
iv	IT Assistant	Support Staff	Intermittent	person months	1	12	12	-	75,000	900,000
v	Office caretaker	Support Staff	continous	person months	1	18	18	-	30,000	540,000
vi	Guards	Support Staff	continous	person months	2	18	36	-	25,000	900,000
vii	Drivers	Support Staff	continous	person months	1	18	18	-	30,000	540,000
<b>II.</b>	<b>Total - OUT OF POCKET EXPENSES</b>									<b>49,223,600</b>
<b>III.</b>	<b>PROVISIONAL SUM</b>									
(i)	Public Awareness Program, any other									1,000,000
(ii)	Trainings									5,000,000
<b>III.</b>	<b>Total - PROVISIONAL SUM = (i) + (ii)</b>									<b>6,000,000</b>
<b>IV</b>	<b>CONTINGENCIES - 3%</b>									
	Total - CONTINGENCIES = 3% of (I+II+III)									6,619,956
	<b>Grand Total ( I + II + III + IV ) in PKR</b>					PM: <b>264</b>			Cost:	<b>227,285,156</b>

## PROCUREMENT PLAN

### Basic Data

<b>Project Name:</b> Punjab Intermediate Cities Improvement Investment Project	
<b>Project Number:</b> 46526-007	<b>Approval Number:</b> 3562
<b>Country:</b> Pakistan	<b>Executing Agency:</b> Local Government and Community Development Department, Government of Punjab
<b>Project Procurement Risk:</b> High	<b>Implementing Agency:</b> N/A
<b>Project Financing Amount:</b> US\$ 250,000,000 <b>ADB Financing:</b> US\$ 200,000,000 <b>Cofinancing (ADB Administered):</b> <b>Non-ADB Financing:</b> US\$ 50,000,000	<b>Project Closing Date:</b> 30 June 2024
<b>Date of First Procurement Plan:</b> 19 September 2017	<b>Date of this Procurement Plan:</b> 7 July 2020, Version 5
<b>Advance Contracting:</b> No	<b>e-GP:</b> No

### A. Methods, Thresholds, Review and 18-Month Procurement Plan

#### 1. Procurement and Consulting Methods and Thresholds

Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works		
Method	Threshold	Comments
International Competitive Bidding for Goods	US\$ 2,000,000 and Above	Prior.
National Competitive Bidding for Goods	Between US\$ 100,000 and US\$ 1,999,999	The first NCB is subject to prior review, thereafter post review.
Shopping for Goods	Up to US\$ 99,999	The first RFQ is subject to prior review, thereafter post review.
International Competitive Bidding for Works	US\$ 15,000,000 and Above	Prior. ADB standard bidding document; Post-qualification.
National Competitive Bidding for Works	Between US\$ 100,000 and US\$ 14,999,999	The first NCB is subject to prior review, thereafter post review.
Shopping for Works	Up to US\$ 99,999	The first RFQ is subject to prior review, thereafter post review.

Consulting Services	
Method	Comments
Quality- and Cost-Based Selection for Consulting Firm	90:10; and 80:20 weightage. Prior. ADB standard request for proposal.
Quality-Based Selection for Consulting Firm	Prior. ADB standard request for proposal.
Consultant's Qualification Selection for Consulting Firm	Prior. ADB standard request for proposal.
Least-Cost Selection for Consulting Firm	Prior. ADB standard request for proposal.
Fixed Budget Selection for Consulting Firm	TBD
Individual Consultant Selection for Individual Consultant	Prior. Posted in the consultant management system.

#### 2. Goods and Works Contracts Estimated to Cost \$1 Million or More

The following table lists goods and works contracts for which the procurement activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value	Procurement Method	Review (Prior/	Bidding Procedure	Advertisement Date	Comments
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				Post)		(quarter/year)	
PICIIP-03-Sahiwal-Water and Sanitation	Procurement of Water Supply and Sanitation: Water supply system, filtration plants, tubewells, OHRs and trunk main sewer, Effluent pumping station and allied works  Lot 1: Lot 1: North Zone (Water Supply) Water supply system, filtration plants, tubewells, OHRs, SCADA and allied works Lot 2: Lot 2: North Zone A (Sanitation) Trunk main sewer lines and allied works Lot 3: Lot 3: North Zone B (Sanitation) Trunk main sewer Conduit, Influent pumping station and allied works Lot 4: Lot 4: South Zone (Water Supply and Sanitation) Water supply system, filtration plants, tubewells, OHRs, SCADA and trunk main sewer, Effluent pumping station and allied works	55,000,000.00  14,200,000.00  14,200,000.00  13,400,000.00  13,200,000.00	NCB	Prior	1S2E	Q2 / 2020	Prequalification of Bidders: N  Domestic Preference Applicable: N  Bidding Document: Large Works
PICIIP-04 A-Road Upgradation Sahiwal	Upgradation/Rehabilitation of existing roads, streets and pavements in Sahiwal	2,000,000.00	NCB	Post	1S2E	Q3 / 2020	Prequalification of Bidders: N  Domestic Preference Applicable: N  Bidding Document: Small Works
PICIIP-08 A-Sahiwal-WWTP	Construction of Wastewater Treatment Plant (WWTP) in North Zone Sahiwal	11,500,000.00	ICB	Prior	1S2E	Q2 / 2020	Prequalification of Bidders: N  Domestic Preference Applicable: N  Bidding Document: Large Works

PICIIP-11- Sialkot-Water and Sanitation	Procurement of Works for Rehabilitation / Improvement of Water Supply and Sewerage System in North Zone, Sialkot	50,000,000.00	NCB	Prior	1S2E	Q2 / 2020	Prequalification of Bidders: N  Domestic Preference Applicable: N  Bidding Document: Large Works
	Lot 1: Lot 1: Sewerage Lines and Allied works (Zone 3-A)	14,700,000.00					
	Lot 2: Lot-2 Precast RCC Conduits and Allied Works (Zone 3-B)	14,200,000.00					
	Lot 3: Lot-3 Influent Pumping Station, Forcemain and Allied Works (Zone 3-C)	12,900,000.00					
	Lot 4: Lot-4 Water Supply System (Zone 3-D)	8,200,000.00					
PICIIP-12- Sialkot-W WTP	Construction of Wastewater Treatment Plant (WWTP) in North Zone, Sialkot	13,000,000.00	ICB	Prior	1S2E	Q2 / 2020	Prequalification of Bidders: N  Domestic Preference Applicable: N  Bidding Document: Large Works
PICIIP-15- PLGA Lala Musa	Upgradation of Punjab Local Government Academy (PLGA) campus at Lala Musa	2,000,000.00	NCB	Post	1S2E	Q1 / 2021	Prequalification of Bidders: N  Domestic Preference Applicable: N  Bidding Document: Small Works

### 3. Consulting Services Contracts Estimated to Cost \$100,000 or More

The following table lists consulting services contracts for which the recruitment activity is either ongoing or expected to commence within the next 18 months.

Package	General Description	Estimated	Recruitment	Review	Advertisement	Type of	Comments
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Number		Value	Method	(Prior/ Post)	Date (quarter/year)	Proposal	
PICIIP-Cons_01A	Individual Consultants	1,000,000.00	ICS	Prior	Q1 / 2020		Assignment: National  Expertise: Project Management  Comments: Multiple contracts, adv Q1, Q2, and Q3
PICIIP-Cons_03	Operational design and business model (ODBM) consultant	2,500,000.00	QCBS	Prior	Q4 / 2019	FTP	Assignment: International  Quality-Cost Ratio: 90:10
PICIIP-Cons_04	Audit and finance consultant	300,000.00	QCBS	Prior	Q3 / 2020	BTP	Assignment: National  Quality-Cost Ratio: 80:20
PICIIP-Cons_05A	Capacity building of Local Government and Community Development Department	3,500,000.00	QCBS	Prior	Q3 / 2020	FTP	Assignment: International  Quality-Cost Ratio: 80:20
PICIIP-Cons_05B	Urban Mobility (Preparation of land use plan, urban transport plan and urban mobility planning) Design and Supervision Consultant (Firm)	3,000,000.00	QCBS	Prior	Q3 / 2020	FTP	Assignment: International  Quality-Cost Ratio: 80:20
PICIIP-Cons_06B	Transaction advisory for Waste Water Treatment Plant (WWTP) - Public Private Partnership (PPP)	500,000.00	QCBS	Prior	Q1 / 2021	BTP	Assignment: National  Quality-Cost Ratio: 80:20
PICIIP-Cons_07	Hiring of Consultants for Smart Cities Initiative	1,500,000.00	QCBS	Prior	Q1 / 2021	FTP	Assignment: International  Quality-Cost

							Ratio: 80:20
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**4. Goods and Works Contracts Estimated to Cost Less than \$1 Million and Consulting Services Contracts Less than \$100,000 (Smaller Value Contracts)**

The following table lists smaller-value goods, works and consulting services contracts for which the activity is either ongoing or expected to commence within the next 18 months.

Goods and Works								
Package Number	General Description	Estimated Value	Number of Contracts	Procurement Method	Review (Prior/Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
PICIIP-24-PMU Establishment	General Office, IT Equipment, Furniture and Fixtures, Office Repair and Communication & Media Equipment	450,000.00	6	SHOPPING	Post		Q3 / 2020	Comments: Size of each contract amounts to \$100,000 or less
PICIIP-25-Miscellaneous SWM & WSS Goods	Miscellaneous Goods for Water & Sanitation and SWM	150,000.00	3	SHOPPING	Prior		Q3 / 2020	Comments: Size of each contract amounts to \$100,000 or less
PICIIP-26-Miscellaneous Civil Works	Miscellaneous Civil Works for STP site Sahiwal (boundary wall, sheds etc)	100,000.00	1	SHOPPING	Post		Q3 / 2020	
PICIIP-27-Miscellaneous Civil Works	Miscellaneous Civil Works for SWM Site Sahiwal (parking sheds, stores etc)	150,000.00	1	SHOPPING	Prior		Q3 / 2020	Comments: small works, simple in nature, NCB not advisable
PICIIP-28-Miscellaneous Civil Works	Miscellaneous Civil Works for STP site Sialkot (boundary wall, sheds etc)	100,000.00	1	SHOPPING	Post		Q3 / 2020	
PICIIP-29-Miscellaneous	Miscellaneous	150,000.00	1	SHOPPING	Post		Q3 / 2020	



aneous Civil Works	Civil Works for SWM Site Sialkot (parking sheds, stores etc)			ING					Comments: Small Works, simple in nature. NCB not advisable
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Consulting Services								
Package Number	General Description	Estimated Value	Number of Contracts	Recruitment Method	Review (Prior/Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
None								

## B. Indicative List of Packages Required Under the Project

The following table provides an indicative list of goods, works and consulting services contracts over the life of the project, other than those mentioned in previous sections (i.e., those expected beyond the current period).

Goods and Works							
Package Number	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Review (Prior/Post)	Bidding Procedure	Comments
PICIIP-04-Road Upgradation	Upgradation of existing roads, footpaths, signaling, green belts open spaces and Parks:	10,000,000.00	2	NCB	Post	1S2E	Prequalification of Bidders: N  Domestic Preference Applicable: N  Bidding Document: Small Works
	Lot 1: Upgradation work in Sahiwal	5,000,000.00					
	Lot 2: Upgradation work in Sialkot	5,000,000.00					
PICIIP-05-SCADA	Installation of SCADA	2,000,000.00	2	ICB	Prior	1S2E	Prequalification of Bidders: N  Domestic Preference Applicable: N  Bidding Document: Goods
	Lot 1: Lot 1: Sahiwal DNI Zone: Installation of	1,000,000.00					

	SCADA System Lot 2: Lot 2: Sialkot DNI Zone: Installation of SCADA System	1,000,000.00					
PICIIP-06-Water Meters	Supply of postpaid and pre-paid meters  Lot 1: Lot 1: Sahiwal: Supply of 6,400 postpaid, 600 prepaid meters Lot 2: Lot 2: Sialkot: Supply of 8,800 postpaid, 800 prepaid meters	2,000,000.00  1,000,000.00  1,000,000.00	2	ICB	Prior	1S2E	Prequalification of Bidders: N  Domestic Preference Applicable: N  Bidding Document: Goods
PICIIP-08B-Sahi wal-WWTP	Construction of Treated Water Conveyance System for Wastewater Treatment Plant (WWTP) in North Zone, Sahiwal	7,000,000.00	1	ICB	Prior	1S2E	Prequalification of Bidders: N  Domestic Preference Applicable: N  Bidding Document: Large Works
PICIIP-09-SKT-B us Terminal	Construction of Bus Terminal in Sialkot	1,900,000.00	1	ICB	Post	1S2E	Prequalification of Bidders: N  Domestic Preference Applicable: N  Bidding Document: Large Works
PICIIP-10-SWL- Bus Terminal	Construction of Bus Terminal in Sahiwal	4,000,000.00	1	NCB	Post	1S2E	Prequalification of Bidders: N  Domestic Preference Applicable: N  Bidding Document: Small Works
PICIIP-22-Establi	Establishment of Smart City	2,000,000.00	2	NCB	Prior	1S2E	Prequalification of Bidders: N

shment of Smart City	Intervention, AMIS, MIS, City Central Control Room, Municipal Complaint Management and Re-address System, development of dashboards for monitoring & evaluation Lot 1: Lot 1: Establishment of Smart City Intervention in Sahiwal	1,000,000.00					Domestic Preference Applicable: N  Bidding Document: Small Works
	Lot 2: Lot 2: Establishment of Smart City Intervention in Sialkot	1,000,000.00					
PICIIP-23- Smart City Equipment	SMART City Equipment  Lot 1: Lot 1: Sahiwal IT Equipment, Software etc Lot 2: Lot 2: Sialkot IT Equipment, Software etc	2,000,000.00  1,000,000.00 1,000,000.00	2	ICB	Prior	1S1E	Prequalification of Bidders: N  Domestic Preference Applicable: N  Bidding Document: Goods

Consulting Services							
Package Number	General Description	Estimated Value	Number of Contracts	Recruitment Method	Review (Prior/ Post)	Type of Proposal	Comments
None							

### C. List of Awarded and On-going, and Completed Contracts

The following tables list the awarded and on-going contracts, and completed contracts.

#### 1. Awarded and Ongoing Contracts

Goods and Works							
Package Number	General Description	Estimated Value	Awarded Contract Value	Procurement Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Comments
PICIIP-02-SWM, Water and Sanitation Equipment	Solid Waste Management, Water & Sanitation Equipment	6,500,000.00	5,768,112.00	ICB	Q2 / 2019		
PICIIP-14-P LGA	Construction of Punjab Local	13,000,000.00	11,999,132.00	NCB	Q2 / 2019	27-NOV-19	

Lahore	Government Academy at Lahore						
PICIIP-01-PUBLICSPA CES	Upgrading of Existing Parks in Sahiwal & Sialkot	5,500,000.00	2,982,522.00	NCB	Q2 / 2019		

Consulting Services							
Package Number	General Description	Estimated Value	Awarded Contract Value	Recruitment Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Comments
PICIIP-Cons_02	Engineering, procurement, and construction management (EPCM) consultant	3,000,000.00	3,350,000.00	QCBS	Q3 / 2017	12-APR-18	PCSS 0001

## D. National Competitive Bidding

### 1. General

The procedures to be followed for national competitive bidding shall be those set forth in the Public Procurement Rules 2004 [S. R. O. 432 (1)/2004] issued on the 9<sup>th</sup> June 2004 by the Public Procurement Regulatory Authority Ordinance 2002 (XXII of 2002) of the Islamic Republic of Pakistan with the clarifications and modifications described in the following paragraphs required for compliance with the provisions of the ADB Procurement Guidelines.

### 2. Registration

- (i) Bidding shall not be restricted to pre-registered firms and such registration shall not be a condition for participation in the bidding process.
- (ii) Where registration is required prior to award of contract, bidders: (i) shall be allowed a reasonable time to complete the registration process; and (ii) shall not be denied registration for reasons unrelated to their capability and resources to successfully perform the contract, which shall be verified through post-qualification.

### 3. Prequalification

Normally, post-qualification shall be used unless prequalification is explicitly provided for in the loan agreement/procurement plan. Irrespective of whether post qualification or prequalification is used, eligible bidders (both national and foreign) shall be allowed to participate.

### 4. Bidding Period

The minimum bidding period is twenty-eight (28) days prior to the deadline for the submission of bids.

### 5. Bidding Documents

Procuring entities shall use the applicable standard bidding documents for the procurement of goods, works and services acceptable to ADB.

## **6. Preferences**

No domestic preference shall be given for domestic bidders and for domestically manufactured goods.

## **7. Advertising**

Invitations to bid shall be advertised in at least one widely circulated national daily newspaper or freely accessible, nationally-known website allowing a minimum of twenty-eight (28) days for the preparation and submission of bids. NCB contracts estimated to cost \$500,000 or more for goods and related services and \$1,000,000 or more for civil works will be advertised on ADB's website via the posting of the Procurement Plan.

## **8. Bid Security**

Where required, bid security shall be in the form of a bank guarantee from a reputable bank.

## **9. Bid Opening and Bid Evaluation**

- (i) Bids shall be opened in public.
- (ii) Evaluation of bids shall be made in strict adherence to the criteria declared in the bidding documents and contracts shall be awarded to the lowest evaluated bidder.
- (iii) Bidders shall not be eliminated from detailed evaluation on the basis of minor, non-substantial deviations.
- (iv) No bidder shall be rejected on the basis of a comparison with the employer's estimate and budget ceiling without the ADB's prior concurrence.
- (v) A contract shall be awarded to the technically responsive bid that offers the lowest evaluated price and no negotiations shall be permitted.

## **10. Rejection of all Bids and Rebidding**

Bids shall not be rejected and new bids solicited without the ADB's prior concurrence.

## **11. Participation by Government-owned enterprises**

Government-owned enterprises in the Islamic Republic of Pakistan shall be eligible to participate as bidders only if they can establish that they are legally and financially autonomous, operate under commercial law and are not a dependent agency of the contracting authority. Furthermore, they will be subject to the same bid and performance security requirements as other bidders.

## **12. ADB Member Country Restrictions**

Bidders must be nationals of member countries of ADB, and offered goods and services must be produced in and supplied from member countries of ADB.

