KWSSIP
Karachi Water & Sewerage Services Improvement Project

Environmental & Social Management Plan

Improved Water Supply and Sewerage in Additional Low-Income Communities Project

FINAL REPORT
OCTOBER 2023

MMP
MM Pakistan (Pvt) Ltd.

Second Karachi Water & Sewerage Services

Improvement Project [KWSSIP-2]

Environmental & Social Management Plan of Improved Water Supply and Sewerage in Additional Low-Income Communities Project

October 2023

Project Implementation Unit (PIU)

Karachi Water & Sewerage Services Improvement Project (KWSSIP)

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Environmental & Social Management Plan of Improved Water Supply and Sewerage in Additional Low-Income Communities Project

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List of Acronyms

AIIB	Asian Infrastructure Investment Bank
AHS	Affected Households
ARP	Abbreviated Resettlement Plan
BOQ	Bill of Quantities
BOR	Board of Revenue
CBOs	Community Based Organizations
CHS	Community Health and Safety
CLO	Community Liaison Office
CO	Carbon Monoxide
CSC	Construction Supervision Consultant
dia	Diameter
EARs	Environmental Assessment Regulations
ECP	Environmental Code of Practices
EHS	Environment, Health and Safety
EHSGs	Environmental Health and Safety Guidelines
EPA	Environmental Protection Agency
ESA	Environmental and Social Assessment
ESCP	Environment and Social Commitment Plan
ESF	Environmental and Social Framework
ESHS	Environmental, Social, Health and Safety
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental & Social Management Plan
ESS	Environmental and Social Standards
FGD	Focus Group Discussion
GBV	Gender Based Violence
GIIP	Good International Industry Practice
GIS	Geographical Information System
GoS	Government of Sindh
GRM	Grievance Redress Mechanism
H&S	Health and Safety
HIV/AIDS	Human Immunodeficiency Virus / Acquired immunodeficiency syndrome
IEE	Initial Environmental Examination
ILO	International Labor Organization
IOSH	Institution of Occupational Safety and Health
IPC	Instruction of Payment Certificate
IR	Involuntary Resettlement
JHA	Job Hazard Analysis
KDA	Karachi Development Authority
KWSC	Karachi Water & Sewerage Corporation
KWSSIP	Karachi Water & Sewerage Services Improvement Project
LMP	Labor Management Plan
LAA	Land Acquisition Act
MMP	MM Pakistan (Pvt.) Ltd.

MSIP	Management Strategies and Implementation Plans
NC	Non-compliance Report
NGO	Non-Governmental Organization
NOC	No Objection Certificate
OHS	Occupational Health and Safety
PAH	Project Affected Household
PAPs	Project Affected Persons
PD	Project Director
PIU	Project Implementation Unit
PKR	Pakistani Rupee
PPE	Personal Protective Equipment
PSC	Project Steering Committee
RC	Replacement Cost
RIP	Resettlement Implementation Plan
RP	Resettlement Plan
SC	Supervisory Consultants
SEA	Sexual Exploitation and Abuse
SEPA	Sindh Environmental Protection Agency
SIA	Social Impacts Assessment
SKAA	Sind Katchi Abadi Authority
SMF	Social Management Framework
SO_2	Sulfur dioxide
SOPs	Series of Projects
SOSH	Sindh Occupational Safety and Health
SSMC	Social Safeguard Management Cell
sq	Square
TMP	Traffic Management Plan
TPV	Third Party Validation
VU	Vulnerable
WB	World Bank
WBG	World Bank Group
WMP	Waste Management Plan

1 Introduction

The Second Karachi Water and Sewerage Services Improvement Project (KWSSIP-2) is a program initiated by the Government of Sindh through the World Bank and Asian Infrastructure Investment Bank. KWSSIP-2 is divided into four parts called Series of Projects (SOPs), with each SOP having three components: Reforms, Securing Sustainable Water Supply and Sewerage, and Project Management and Studies. The Project Implementation Unit (PIU) in Karachi will implement the project.

One part of the project is the Improved Water Supply and Sewerage in additional Low-Income Communities Project, which will improve water supply and sewerage infrastructure in targeted low-income settlements. It will result in good quality sustainable services, focusing on responsible water use, regular payment of bills, and maintaining a hygienic environment for better health.

The project will be co-financed by the World Bank, the Asian Infrastructure Investment Bank, and the Government of Sindh. This document presents the Environmental and Social Management Plan (ESMP) study conducted for the proposed project to fulfill the requirements of the Sindh Environmental Protection Agency and the World Bank's Environment and Social Framework.

The proposed Improved Water Supply and Sewerage in additional Low-Income Communities Project is aimed to fulfill the specific needs of the selected low-income communities by providing equitable access to water and sanitation services. The project will offer the following major benefits:

- **Health and hygiene**: Lack of access to safe drinking water and proper sanitation facilities can spread waterborne diseases such as cholera, typhoid, and hepatitis. Improved water supply and sewerage can help reduce the incidence of these diseases, improving the health and well-being of residents.
- **Environmental sustainability**: Poor sanitation practices, such as open defecation, can lead to environmental pollution and contribute to the spread of diseases. Properly designed and maintained sewerage systems can help prevent these problems and promote environmental sustainability.
- **Economic development**: Access to clean water and proper sanitation is crucial for economic development, as it can improve productivity and reduce healthcare costs. Improving water supply and sewerage infrastructure can create jobs and support local economic development.
- **Social equity**: Access to clean water and sanitation is a basic human right, and ensuring that all residents have access to these services is important for promoting social equity and reducing inequalities.

1.1 Objectives of the ESMP

The ESMP has been developed in compliance with the mitigation hierarchy as per the World Bank’s ESF. Impacts and risks associated with the project’s pre-construction, construction, and operational phases have been assessed, and mitigation and control strategies have been devised accordingly to address the potential environmental and social risks associated with the project.

Other associated objectives of the ESP are to:

- Facilitate PIU of KWSSIP in ensuring environmental and social sustainability of the project;

- Establish a baseline of existing social and environmental conditions before project initiation by collecting secondary and primary data/information on the physical, biological, and socio-economic environment of the project area;
- Identify potentially significant environmental and social impacts (both positive and negative) during all stages of the project;
- Avoid, minimize, and suggest mitigation and compensation measures for significant adverse impacts;
- Conduct, record, and report public consultation and participation with major stakeholders; and
- Provide an Environmental and Social Management Plan (ESMP) for all project stages as a tool for implementing the suggested measures and monitoring and evaluation mechanisms with adequate resources, including capacity building of implementing agencies.

1.2 Document Structure

Chapter 1: Introduction – This chapter includes a brief project overview and legal and institutional requirements related to the environmental protection of the proposed project.

Chapter 2: Environmental and Social Management Plan – The Environmental and Social Management Plan (ESMP) identifies the adverse impacts of the proposed project during the pre-construction, construction, and operational phases. It includes the mitigation measures to manage these impacts to minimize the impact on the environment, workers, and communities.

Chapter 3: Environmental and Social Monitoring Plan – The Environmental and Social Monitoring Plan (ESMoP) provides monitoring activities' methodology, frequency, and duration.

Chapter 4: Institutional Arrangements. This chapter includes ESMP implementation. The institutional arrangements during construction and operation and the roles and responsibilities are presented in this chapter. It also describes the ESMP implementation training, reporting, and costs. Lastly, the Grievance Redress Mechanism (GRM) adopted for addressing grievances from the workers, communities, and stakeholders, the planned stakeholders' engagement and consultation throughout the project cycle, are discussed in this chapter.

In addition, the Project Background, Legal and Institutional Requirements, Project Description, Description of the Environment, Assessment of Potential E&S Impacts and Risks, Analysis of Alternatives, Grievance Redress Mechanism, and Information on Disclosure, Consultation, and Participation prepared as part of the Environmental and Social Impact Assessment (ESIA) are provided as Annexes of the ESMP.

2 Environmental and Social Management Plan

The ESMP includes the potentially negative impacts and risks during pre-construction, construction, and operation, lists of mitigation and prevention measures to address the negative impacts and risks, and the person responsible for implementing, preventing, monitoring, and inspecting these measures. The ESMP matrix provided in **Table 2-1** is prepared following the WB ESS.

The Contractor will ensure they present the implementation status of mitigation and preventive measures identified in this matrix in every monthly report, with quantifiable information.

2.1 Various Mitigation and Control Measures

The ESMP includes different types of mitigation and control measures and guidelines for managing environmental, health, safety and social impacts and risks in the form of:

- General and non-site-specific measures in the form of Environmental and Social Codes of Practices (ECPs) to address general construction and operation matters.
- Specific mitigation measures.
- Guidelines for making construction and operational phase site-specific plans.

2.2 Environmental and Social Code of Practices for Construction

The environmental and social codes of practice (ECPs) are generic, non-site-specific guidelines for the construction phase. The ECPs consist of environmental and social management guidelines and OHS practices to be followed by the contractors for sustainable management of all environmental, social, health, and safety issues. The ECPs are listed below.

- ECP 1: Waste Management
- ECP 2: Fuels and Hazardous Goods Management
- ECP 3: Water Management
- ECP 4: Drainage Management
- ECP 5: Air Quality Management
- ECP 6: Noise and Vibration Management
- ECP 7: Protection of Flora
- ECP 8: Protection of Fauna
- ECP 9: Road Transport and Road Traffic Management
- ECP 10: Construction Camp Management
- ECP 11: Worker Health and Safety

2.3 Site Specific Environmental and Social Management Plan (SSESMP)

The Contractor will also prepare an occupational health and safety (OHS) plan for managing the identified OHS hazards and control measures. The OHS plan will comply with WB ESS2, WB Environmental, Health, and Safety (EHS) Guidelines, Sindh Occupational Safety and Health Act, 2017, Sindh Labour Acts, International Labour Organization (ILO) Code of Practices and Good International Industry Practices (GIIP). A review and update of the OHS plan will be done.

2.4 Occupational Health and Safety Plan

The Contractor will also prepare an occupational health and safety (OHS) plan for managing the identified OHS hazards and control measures. The OHS plan will comply with ESS2, WB Environmental, Health, and Safety (EHS) Guidelines, WB Health and Safety Framework South Asia Region (SAR); Sindh Occupational Safety and Health Act, 2017, Sindh Labour Acts, International Labour Organization (ILO) Code of Practices and Good International Industry Practices (GIIP). A review and update of the OHS plan will be done:

- There is a significant change in the scope of the project;
- There is a change in construction methodology/technique based on site conditions; and
- Following significant OHS hazard or a major accident.

2.4.1 Job Hazard Analysis

The Contractor will conduct a job hazard analysis (JHA) for each construction component, focusing on job tasks to identify hazards before they occur. It will focus on the relationship between the worker, the task, the tools, and the work environment. After identifying uncontrolled hazards, steps should be taken to utilize the hierarchy of control: elimination, substitution, engineering controls, administrative controls, and personal protective equipment, to minimize them to an acceptable risk level. Many workers are injured and killed at the worksite every day. The JHA should be one of the major components of the larger commitment of the Contractor's health and safety management system. The JHA should be conducted on many jobs in the worksite. Priority should be given to the following types of jobs:

- Jobs with the highest injury or illness rates;
- Jobs with the potential to cause severe or disabling injuries or illness, even if there is no history of previous accidents;
- Jobs in which one simple human error could lead to a severe accident or injury;
- Jobs that are new or complex to the construction or have undergone changes in construction processes and procedures; and
- Jobs complex enough to require written instructions.

2.4.2 EHS in Method Statement

The Contractor will include an EHS Chapter in each Method Statement. This EHS section will be based on the JHA and other provisions of the OHS Plan and environmental issues of the site and specific to construction methods to be followed by the Contractor. This section will be reviewed by the EHS

Specialists of the Engineer/Construction Supervision Consultant (CSC) and confer approval along with other technical parameters to be reviewed by the engineering team of the CSC. The EHS Specialists will also review each revision of the method statement, and their concurrence will be required to approve the method statements.

2.5 Inclusion of ESHS Conditions in the Bidding Documents

To make Contractors fully aware and responsible for ensuring ESHS compliance, the following conditions and all other relevant conditions in line with 'WB – Procurement of Works & User's Guide – Updated January 2017, will be made part of the bidding documents:

a) The Contractor will obtain Environmental, Social, Safety, and Health (ESHS) Performance Security for Compliance with the Contractor's ESHS obligations.

b) The Contractor will be required to declare any civil work contracts that have been suspended or terminated and performance security called by an employer for reasons related to the non-compliance of any environmental, social, or health or safety requirements or safeguard or related to sexual exploitation and abuse and gender-based violence in the past five years.

c) The Contractor will submit comprehensive and concise Environmental, Social, Health, and Safety Management Strategies and Implementation Plans (ESHS-MSIP), which include but are not limited to a mobilization strategy, strategy for obtaining consents/permits, traffic management plan, waste management plan, workers camp management plan, etc. and a strategy for marking and respecting work site boundaries, etc.

d) The Contractor will recruit qualified and experienced Environment, Health, Safety, and Social Staff with relevant educational backgrounds and experience for each site to manage E&S aspects of the project.

e) The Contractor will be bound to disclose the "Recruitment Policy" and follow it. The contractor will hire at least 60% of the people who live near the project area.

f) The Contractor will be encouraged to contribute to the well-being of the environment and society exceptionally and find ways to take up the relevant stakeholders' suggestions as a part of their commitment and develop solutions or alternatives.

g) ESMP will be made part of the bidding documents.

h) Provision related to SEA/SH/GBV will be incorporated in the bidding document.

i) The Contractor will be required to ensure compliance with the 'Code of Conduct' signed by each of its employees/workers. The issues to be addressed in the Code of Conduct will include the following:

- Compliance with applicable laws, rules, and regulations of the jurisdiction;
- Compliance with applicable health and safety requirements (including wearing prescribed personal protective equipment, preventing avoidable accidents, and a duty to report conditions or practices that pose a safety hazard or threaten the environment);
- The use of illegal substances;
- Non-Discrimination (for example, based on family status, ethnicity, race, gender, religion, language, marital status, birth, age, disability, or political conviction);

- Interactions with community members (for example, to convey an attitude of respect and non-discrimination);
- Sexual harassment (for example, to prohibit the use of language or behavior, in particular towards women or children, that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate);
- Violence or exploitation (for example, the prohibition of the exchange of money, employment, goods, or services for sex, including sexual favors or other forms of humiliating, degrading, or exploitative behavior);
- Protection of children (including prohibitions against abuse, defilement, or otherwise unacceptable behavior with children, limiting interactions with children, and ensuring their safety in project areas);
- Sanitation requirements (for example, to ensure workers use specified sanitary facilities provided by their employer and not open areas);
- Avoidance of conflicts of interest (such that benefits, contracts, or employment, or any preferential treatment or favors, are not provided to any person with whom there is a financial, family, or personal connection);
- Respecting reasonable work instructions (including regarding environmental and social norms);
- Protection and proper use of the property (for example, to prohibit theft, carelessness, or waste);
- Duty to report violations of this Code;
- Non-retaliation against workers who report violations of the Code if that report is made in good faith;

Contract payments will be linked to environmental, health, and safety performance, measured by completing the prescribed environmental and social mitigation measures in the site-specific ESMP (SSESMP) and control measures described in the OHS plan. In addition, for any non-compliance causing damages or material harm to the natural environment, workers, public or private property, or resources, the Contractor will be required to either remediate/rectify any such damages in a timeframe specified by and agreed with the engineer (CSC), or pay IA for the cost (as assessed by IA) of contracting a third party to carry out the remediation work. For repeated non-compliance, the Contractor will be penalized. The penalty for non-compliance with the SSESMP and OHS Plan requirements will be 3% of the total Civil Works in the Instruction of Payment Certificate (IPC). The penalty will be imposed after all contractual instruments are applied and a Non-compliance Report (NCR) is issued by the CSC / Engineer.

2.6 Criteria for the Selection of Sub-Contractors

The Contractor will ensure that the following criteria are followed for the selection of any sub-contractor to ensure their ability to implement ESHS requirements:

- All ESF / ESS Requirements applicable to the main Contractor will also apply to the hired Sub-contractors.

- Sub-contractor should have proven experience in providing services for at least five years with successful ESHS management.
- The sub-contractor will provide the following:
- Details of company information with organization structure, list of manpower with the Curriculum Vitae (CVs) of key personnel, plant, and machinery list mentioning year of manufacturing, support agencies, other facilities, and resources.
- Details of completion of similar types of projects within the last five years indicating their brief scope of work, the value of work, contractual duration, actual completion of the project, client's name, contact details of that client, safety appreciation or compliance certification or inspection of plant and machinery, EHS statistics, Loss Time Injuries (LTI) graph, etc.
- Details of typical project planning and execution methodology.
- Details of current commitments – List of all the jobs under execution with the value of the job and percentage completion with particular emphasis on projects of similar magnitude carried out.
- Details of experience working on similar kinds of projects.
- Details of EHS policy, safety manual, safety plan, and implementation procedures in line with internationally accepted practices, along with the statistics for the last four years.
- Details of quality assurance and quality control practices currently in place for the execution of similar work.
- Details of Contractor's financial performance documents (audited balance sheets with profit and loss statements) and audit reports for the last five preceding years.
- Details of documents in support of Health, Safety, Environment, and Quality [HSEQ] performance.
- Details of insurance of employee policy, medical evaluation including drug testing policy.
- Details of managing and monitoring sub-contractor performance.
- Details of safety and security evaluation policy.
- Copies of ISO 9001, 14001, Occupational Health and Safety Assessment Series (OHSAS) 18001, or any other accreditation and certification as applicable.

Table 2-1: Environmental and Social Management Plan

Impacts and Risks	Details of mitigation / enhancement measure	Relevant Guidelines / Plans	Responsibility
Pre-Construction Phase			
ESS1: Assessment and Management of Environmental and Social Risks and Impacts			
Lack of appropriate E&S personnel with CSC and Contractors	◆ Recruit qualified CSC and Contractors able to implement the Project's Environmental, Social, Health, and Safety requirements. ◆ Include personnel's education, qualification, and experience requirements in the bidding documents. ◆ Contractors with poor environmental, health, and safety management will not be hired. ◆ Contractor's qualifications will be included as pre-qualification criteria in the short-listing process. ◆ Reflect ESMP conditions in the Contractor's bidding documents and the supervision consultant's ToR. ◆ Allocate necessary funds for ESMP implementation and monitoring.	◆ Bidding and Contract Documents ◆ ESMP, SSESMP, OHS / CHS and Other Plans	◆ CSC's Selection: PIU ◆ Contractor's Selection: PIU & CSC ◆ Contractor's EHSS Staff Recruitment: Contractor ◆ Preparation of Plans: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU
ESS4: Community Health and Safety			
Improper Location of Worker Camps Leading to Environmental and Social Issues	◆ Hire a local workforce with suitable skills. ◆ Campsite locations will be selected by the Contractor with the approval of the Supervision Consultant, with consideration for appropriate distance from settlements and cultural facilities. ◆ Establish strict protocols for community interaction. ◆ Follow labor standards, including Provincial Labor Laws and ILO Standards. ◆ Prepare and implement a Workers Camp Management Plan (CMP) ◆ Other necessary measures include developing a Code of Conduct (COC) for all site personnel, ensuring staff training on prevention of Sexual Exploitation, GBV/SH, avoiding entering settlements, incorporating SEA/SH/GBV provisions in bidding documents, raising awareness of risks among communities and informing them about available grievance mechanisms, avoiding women's routes/places if possible, conducting induction training or workshops on health and hygiene, ensuring necessary medical screening and proof of vaccination (COVID-19) before	Establishment of Campsites at proposed locations and implementation of Labor Management Plan (LMP)	◆ Preparation and Implementation of LMP: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU

Impacts and Risks	Details of mitigation / enhancement measure	Relevant Guidelines / Plans	Responsibility
	employment, and providing training on Worker's GRM and availability of complaint boxes at all work sites. ◆ Workers training on the Worker's GRM. ◆ Complaint boxes will be available at all work sites.		
ESS 5: Restrictions on Land Use and Involuntary Resettlement			
Resettlement issues/Anti Encroachment Drive (AED)	◆ Ensure compliance with the Abbreviated Resettlement Plan (ARP) in accordance with the WB ESS5 to address the resettlement impacts of the project. ◆ Provide compensation and assistance to the Project Affected Persons (PAPs) as outlined in the ARP. ◆ Construction activities will commence only after all compensation and assistance have been duly provided to the PAPs. ◆ Avoid carrying out project works in areas where AED activities have been or are currently being conducted.	Implementation of Abbreviated Resettlement Plan (ARP)	◆ Implementation of RP: PIU ◆ Supervision: CSC ◆ Monitoring: PIU
Construction Phase			
ESS1: Assessment and Management of Environmental and Social Risks and Impacts			
Inadequate Implementation of ESMP, OHS, CHS and Other Specific Plans.	◆ Recruit qualified and experienced Environment, Health, Safety, and Social Staff. ◆ Define Environmental, Social, Occupational, and Community Health and Safety procedures for all works in method statements. ◆ Prepare and implement Site-Specific Environmental Social Management Plan (SSESMP), OHS Plan, CHS Plan, and other required plans based on the ESMP guideline. ◆ PIU to review the Contractor's capacity to safeguard management.	ESMP, OHS, CHS and Other Specific Plans.	◆ Contractor's selection: PIU and CSC ◆ Preparation / Implementation of plans: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU and TPV
ESS2: Labor and Working Conditions			
Occupational Health & Safety	◆ Prepare the Occupational Health and Safety (OHS) Plan before the commencement of construction activities. ◆ Ensure the OHS Plan includes a policy statement, organizational structure, Standard Operating Procedures (SOPs), hazard identification and risk management procedures, job hazard analysis, method statements, training programs, incident reporting mechanisms, and obtain approval from the supervision consultant.	Implementation of OHS Plan, EPRP, ECP 11	◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU and TPV

Impacts and Risks	Details of mitigation / enhancement measure	Relevant Guidelines / Plans	Responsibility
	◆ Adhere to the WB Health & Safety Framework as followed by the PIU-KWSSIP and Contractors and incorporate its principles into the OHS Plan. ◆ Follow the specific mitigation guidelines for hazards and the preparation of the OHS Plan ◆ Include an Emergency Preparedness and Response Plan (EPRP) within the OHS Plan. ◆ Collaborate with national/provincial emergency response services if the Contractor's resources are insufficient. ◆ Ensure provision of first aid units and transportation at every workplace, with appropriate equipment and paramedical staff present at workplaces and construction camps. ◆ Maintain site safety through barricading, netting, signboards, safety diversions, and providing workers with Personal Protective Equipment (PPE). ◆ Develop and implement a zero-tolerance policy for any loss of life incidents. ◆ Organize health and safety training for all site personnel throughout the construction period. ◆ Provide compensation to workers or their legal heirs in case of injury or fatality, following the Sindh Workers Compensation Act, 2015. ◆ Dispose of asbestos pipes discovered during excavation through SEPA (Sindh Environmental Protection Agency) certified waste handlers. ◆ Implement ECP 11: Workers Health and Safety Guidelines.		
Communicable Diseases - COVID- 19	◆ Implement health and safety protocols on COVID-19 (i.e., Health and Safety of Building and Construction Workers - Issued by Ministry of National Health Services, Regulations and Coordination, GoP - April 2020). ◆ Provide awareness to workers on proper sanitation and hygiene practices. ◆ Maintain good housekeeping practices at camp and project sites. ◆ Provide adequate personal hygiene facilities in good condition with an adequate supply of clean water.	Implementation of COVID-19 Guidelines - Health and Safety of Building and Construction Workers, Workers Code of Conduct (CoC), CMP, LMP, ECP 10: Construction Camp Management	◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU and TPV

Impacts and Risks	Details of mitigation / enhancement measure	Relevant Guidelines / Plans	Responsibility
	◆ Arrange treatment of the affected workers on time to control the movement of vector diseases. ◆ Implement Camp Management Plan and Labor Management Procedures (LMP). ◆ Implement ECP 10: Construction Camp Management. ◆ Appoint cleaning staff to maintain cleanliness at campsites.		
Working Conditions	◆ Adhere to labor standards, including the Provincial Labor Laws and International Labor Organization (ILO) Standards. It includes compliance with regulations related to work hours, workers' payments, and compensations. ◆ Provide training to workers on the Grievance Redress Mechanism (GRM) ◆ Provide complaint boxes to allow workers to report misconduct, violations, or grievances. ◆ Ensure strict compliance with the Labor Management Procedures (LMP) to manage and address labor-related issues effectively.	Implementation of Provincial Labor Laws and ILO Standards for work hours, workers payments & compensations	◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU and TPV
Employment of Child Labor	◆ Implement Sindh Prohibition of Employment of Children Act, 2017 and WB ESS2; ◆ Avoid hiring workers below 18 years of age at any construction site. ◆ Ensure that all persons at the site are adults and have government-issued identity cards.	Implementation of Sindh Prohibition of Employment of Children Act, 2017 and WB ESS2	◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU and TPV
ESS3: Resource Efficiency and Pollution Prevention and Management			
Dust Emissions from Construction Activities	◆ Remove excavated material to prevent emission and runoff ◆ Limit speeds of construction vehicles/dumpers in the project area ◆ Regularly train drivers to ensure they follow speed limits ◆ Cover vehicles transporting soil, sand, excavated material, and other construction materials with tarpaulin ◆ Resolve any dust-related public complaints as early as possible through the project's Grievance Redress Mechanism ◆ Take appropriate measures to protect sensitive receptors from dust nuisance ◆ Implement the following: ○ ECP 1: Waste Management ○ ECP 2: Fuels and Hazardous Goods Management ○ ECP 5: Air Quality Management	ESMP, ECP 1, ECP 2, ECP 5, ECP 9	◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU and TPV

Impacts and Risks	Details of mitigation / enhancement measure	Relevant Guidelines / Plans	Responsibility
	○ ECP 9: Road Transport and Road Traffic Management		
Noise from Construction Activities	◆ Prohibit the blowing of horns by construction machinery and vehicles. ◆ Restricted major works to daylight hours as far as possible and avoided noisy works at night. ◆ Maintain all equipment and machinery used during the construction phase. ◆ Resolve any noise-related public complaints registered through the Project's Grievance Redress Mechanism. ◆ Take appropriate measures to protect the identified sensitive receptors from noise nuisance.	ESMP, ECP 10	◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU and TPV
Generation of Excavated Material, Kitchen Waste, Old Asbestos Pipes	◆ Develop a Waste Management Plan (WMP) before construction. ◆ Ensure waste sorting and safe storage for hazardous and non-hazardous materials before disposal. ◆ Provide onsite hazardous waste storage facility with secondary containment. ◆ Appoint licensed and SEPA-approved Contractors to dispose of waste materials. ◆ Ensure timely disposal of domestic waste from the camps to the nearest SSWMB disposal bins. ◆ Implement the following: ○ ECP 1: Waste Management ○ ECP 2: Fuels and Hazardous Goods Management	Implementation of WMP, ECP 1, ECP 2	◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU and TPV
Untreated Disposal of Effluent from Worker Camps	◆ Ensure no untreated effluent is released. ◆ Construct a closed sewage treatment scheme, including soak pits and septic tanks, to treat the effluent from the construction/labor camp. ◆ Build soak pits in absorbent soil and locate them at least 300 meters from nearby water wells, bores, or hand pumps. ◆ Keep the soak pits covered at all times and take measures to prevent the entry of rainwater into them. ◆ When the septic tank is filled with sludge, empty it using a vacuum truck. Obtain approval from KWSC and transfer the removed effluent to the approved municipal drain. ◆ Implement the following: ○ ECP 1: Waste Management	Implementation of WMP, ECP 1, ECP 3, ECP 10	◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU and TPV

Impacts and Risks	Details of mitigation / enhancement measure	Relevant Guidelines / Plans	Responsibility
	○ ECP 3: Water Resources Management ○ ECP 10: Construction Camp Management		
Impacts Associated with Construction of Overhead / Underground Tanks (OHT and UGT) and Pump Rooms	◆ Properly barricade worksites and ensure that workers strictly adhere to the Code of Conduct. They should avoid any contact with local communities. ◆ Ensure that power generators are properly tuned and equipped with soundproof canopies. ◆ Perform transportation of construction material with minimum nuisance, preferably in the evening or at night when there is less traffic on the roads to avoid congestion. ◆ For work that requires workers to be at height during OHT or UGT construction, implement appropriate fall protection systems such as safety nets or guardrails to prevent falls. ◆ Provide workers with appropriate personal protective equipment (PPE) such as safety harnesses, hard hats, safety glasses, and safety shoes. ◆ Inspect PPE before each use to ensure it is in good condition.	Implementation of ECP 9, ECP 11, OHS, CHS and Other Specific Plans, Workers Code of Conduct.	◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU and TPV
Improper Site Restoration	◆ Dismantle and fully remove worksite facilities and camps, including worker rest areas, store rooms, drinking water utilities, and temporary materials stockpiling enclosures. ◆ Remove drinking water facilities, including pipes and storage tanks, as well as sanitary facilities, such as the sewage network and toilets. ◆ Remove electric facilities, including electrical posts and wiring. This task should be carried out by specialized personnel. ◆ Once all movable elements have been removed, ® Remove fencing, anchoring, and other minor facilities, along with any leftover concrete from mixing. ◆ Clean the ground by removing all affected topsoil and handing it over to authorized waste handlers. ◆ Add topsoil where necessary to restore the site. ◆ Implement ECP 2: Fuels and Hazardous Goods Management.	Implementation of Spill Prevention Plan, ECP 2	◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU and TPV ◆ Identification of Compensatory Plantation Sites: PIU
ESS4: Community Health and Safety			
Community Health and Safety	◆ Prepare a Community Health and Safety (CHS) Plan based on construction methods and site-specific hazards.	Implementation of CHS Plan	◆ Implementation: Contractor ◆ Supervision: CSC

Impacts and Risks	Details of mitigation / enhancement measure	Relevant Guidelines / Plans	Responsibility
	◆ Properly barricade and mark construction areas such as trenches, excavations, and holes with warning tapes. ◆ Avoid off-site stacking of material as much as possible; if necessary, position stacking areas away from public access and use warning signs. ◆ Do not pile excavated material next to trenches, and reinstate excavations as soon as possible. ◆ Train site supervisors to be vigilant of people, especially children, attempting to enter the construction area and restrict unnecessary crossing. ◆ Provide access routes, signposts and obstructions, and adequate lighting in excavated areas and trenches for worker and public safety. ◆ Ensure that all vehicle drivers and equipment operators have valid licenses and proven competency to operate safely in populated areas. ◆ Implement measures to minimize dust and noise nuisance to the public, such as using noise suppression on equipment, employing low-dust-producing construction techniques, and using water sprinkling for dust suppression. ◆ Provide safe pedestrian walkways at identified sensitive receptor locations, properly barricaded and made prominent with signs and reflective tapes. ◆ Place sign boards at appropriate locations to warn the public about construction activities and associated risks. ◆ Maintain community liaison and raise awareness about construction-related risks through focus group discussions (FGDs) and public consultations. ◆ Ensure the availability of emergency ambulance services for transporting affected community members to the nearest hospitals.		◆ Monitoring: PIU and TPV
Labor Influx / In-migration / SEA – SH – GBV Incidents	◆ Employ more locals in skilled, semi-skilled, and unskilled work to reduce pressure on resources and avoid conflicts on employment matters. ◆ Take proactive measures to manage potential impacts from labor influx and cultural conflicts, including establishing construction	Workers COC, CHS Plan	◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU and TPV

Impacts and Risks	Details of mitigation / enhancement measure	Relevant Guidelines / Plans	Responsibility
	camps at designated areas and training workers on respectful interaction with local communities. ◆ Adhere to WB ESS4 guidelines on labor influx. ◆ Develop a Code of Conduct (COC) for all site personnel and ensure that all personnel sign and abide by it. ◆ rovide training to project staff on preventing Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA)/Sexual Harassment (SH), and conduct on-site anti-harassment training to raise awareness. ◆ Instruct construction crews to avoid entering settlements and engage skilled trainers to raise awareness among workers about the risks and consequences of violations. ◆ Raise awareness of risks among community members and local health authorities and inform them about available grievance mechanisms. ◆ Provide training to workers and local communities to sensitize them to SEA and SH risks and their responsibilities under the COC. ◆ Avoid routes/places women use as much as possible and identify alternate routes if necessary. ◆ Enforce the COC to protect local communities, including addressing gender-based violence, social issues, and environmental concerns such as tree cutting and hunting. Violations will result in strict punishment, including termination of employment. ◆ Terminate employees who continue misconduct or lack of care, perform duties unprofessionally or negligently, fail to conform to contract provisions, or engage in conduct harmful to the community, safety, health, or the environment. ◆ Prohibit the use of drugs and alcohol and the carrying of weapons into the workplace premises. ◆ Ensure site security arrangements align with Security Management Guidelines for Contractors under WB ESS4 guidance.		

Impacts and Risks	Details of mitigation / enhancement measure	Relevant Guidelines / Plans	Responsibility
	◆ Provide appropriate fencing, security checkpoints, gates, and security guards at construction sites to monitor the entry and exit of workers, staff, and visitors. ◆ Maintain good relations with local communities and their leaders to reduce the risk of vandalism and theft. ◆ Adopt the WB Guidelines on labor influx. ◆ Implement the Gender Action Plan for the entire KWSSIP prepared by PIU for the proposed project.		
Restricted Access	◆ Ensure that space is allocated for safe pedestrian walkways at sensitive receptor locations to facilitate visitors' safe entry and exit. ◆ Maintain the walkway spaces to a high standard suitable for women, children, elderly, patients, and individuals with disabilities. ◆ Properly barricade the walkways as needed and install guardrails to enhance safety. ◆ Make the walkways easily identifiable by installing signs and reflective tapes.	Implementation of CHS Plan	◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU and TPV
Construction Traffic Management and Safety	◆ Implement a Traffic Management Plan (TMP), after obtaining approval from the PIU/CSC before commencing any construction work. ◆ Deploy barricades, signs, markings, flags, lights, and train flagmen at critical locations to ensure safe traffic management. ◆ Provide appropriate training to flagmen in traffic management procedures and equip them with red and green flags and lights. ◆ Develop an Emergency Response Plan (ERP) specifically for handling traffic accidents that may occur during the construction phase. ◆ Adhere to the provisions of the Fatal Accidents Act 1855 and provide compensation in case of accidents involving the local community. ◆ Implement ECP 9: Road Transport and Road Traffic Management as part of the project's environmental and social management measures.	Implementation of TMP, ECP 9	◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU and TPV
Accidental Damage to Existing Infrastructure and Utilities	◆ Conduct utility surveys before initiating excavation work to identify the precise location of existing infrastructure and utilities.	Implementation of CHS Plan	◆ Implementation: Contractor

Impacts and Risks	Details of mitigation / enhancement measure	Relevant Guidelines / Plans	Responsibility
	◆ Establish effective communication channels with utility providers to obtain accurate information regarding the location and depth of underground infrastructure. Share project plans and timelines with them to ensure coordination and minimize the risk of damage. ◆ Mark the locations of underground utilities using visible markers or flags to alert workers and ensure that construction activities are carried out with caution in areas where utilities are present. ◆ Provide comprehensive training to staff and workers involved in the project regarding the importance of utility safety, proper excavation techniques, and the use of equipment to prevent damage. Ensure strict adherence to safety protocols throughout the construction process. ◆ Implement safe digging practices, such as hand digging in narrow streets and avoiding excessive force during excavation, to reduce the likelihood of accidental strikes on utilities. ◆ Engage the local community by informing them about the construction activities and encouraging their participation. Establish a Grievance Redress Mechanism (GRM) through which communities can report any damages to their utilities or infrastructure, ensuring prompt resolution of issues.		◆ Supervision: CSC ◆ Monitoring: PIU and TPV
ESS10: Stakeholder Engagement and Information Disclosure			
Stakeholders Concerns and Engagement	◆ Implement the Stakeholder Engagement Plan (SEP) for the KWSSIP-2 project. ◆ Ensure that public consultations and the participation of stakeholders are carried out throughout the project lifecycle, following the guidelines specified in the KWSSIP-2 Stakeholder Engagement Plan (SEP). ◆ Conduct engagement activities in a meaningful and inclusive manner, providing opportunities for stakeholders to express their concerns and ensuring access to appropriate remedies.	Implementation of KWSSIP-2 SEP	◆ Preparation of Plan: CSC and Contractor ◆ Implementation: PIU, CSC and Contractor ◆ Supervision: CSC Monitoring: PIU and TPV
Operation Phase			
ESS2: Labor and Working Conditions			
Handling of Sodium Hypochlorite / OHS Risk during Cleaning of Sewerage Network	◆ PIU-KWSSIP will develop and implement an Occupational Health and Safety (OHS) Plan for pump rooms and sewerage network cleaning activities.	OHS Plan, Safety Data Sheet (SDS) for sodium hypochlorite.	◆ Preparation of OHS Plan: PIU

Impacts and Risks	Details of mitigation / enhancement measure	Relevant Guidelines / Plans	Responsibility
	◆ Designate areas for the safe storage of sodium hypochlorite, ensuring proper ventilation is in place. ◆ Clearly label containers and prominently display Safety Data Sheets (SDS) in designated areas. ◆ Display emergency contact numbers in pump rooms for quick access during emergencies. ◆ Provide workers with comprehensive hazard information and conduct training on safely handling sodium hypochlorite. ◆ Ensure sodium hypochlorite is stored in cool, dry, and dark places to maintain stability. ◆ Conduct periodic medical check-ups for workers involved in sodium hypochlorite dosing and handling. ◆ Provide workers engaged in sodium hypochlorite dosing and handling with essential Personal Protective Equipment (PPE) that meets the appropriate specifications. ◆ Equip selected pump rooms with fire extinguishers and train staff to respond to accidental fires. ◆ Establish protocols for addressing sodium hypochlorite spills or leaks, including proper waste neutralization and disposal procedures. ◆ Conduct regular training and orientation sessions to promote safety practices and create a safe and efficient working environment. ◆ Maintain proper housekeeping practices at all pump rooms to ensure cleanliness and orderliness. ◆ Provide proper PPE and training to sanitation workers cleaning and maintaining the sewerage network. ◆ Install appropriate warning signs in areas with potential exposure to hydrogen sulfide.		◆ Implementation: Pump Room Operator

3 Environmental and Social Monitoring Plan

The project's Environmental and Social Monitoring Plan (ESMoP) is presented in **Table 3-1**. The monitoring will comprise surveillance to check whether the Contractor is implementing the ESMP requirements and meeting the contract's provisions during the project's construction and operation phases, including the responsible agencies for implementation and supervision. Monitoring frequency and locations of some parameters may require adjustments by the CSC and PIU during project execution.

Table 3-1: Environmental and Social Monitoring Plan

Environmental and Social Aspect	Monitoring Parameters	Monitoring Locations	Monitoring Frequency	Responsibility
Construction Phase				
ESS2: Labor and Working Conditions				
Occupational Health and Safety	◆ Number of unsafe acts/incidents, near misses, first aid injuries, work-related illness, lost time incidents, fatalities ◆ Number of training sessions, toolbox talks, risk assessments ◆ PPE use and violations	All Project Sites	Daily	Contractor, CSC
COVID19	◆ Number of cases in the workforce ◆ Number of COVID-19 tests ◆ Number of workers vaccinated ◆ Audit of provisions and equipment	All Project Sites	To be determined by PIU, CSC at the time of execution	Contractor, CSC
Worker Grievances	◆ Number and types of worker grievances ◆ Resolution timeframes ◆ Number of grievances resolved ◆ Number and duration of worker protests	All Project Sites	Monthly	Contractor, CSC
ESS3: Resource Efficiency and Pollution Prevention and Management				
Ambient Air Quality	◆ Nitrogen Oxide (NO) - 40 µg/ m^3 ◆ Sulphur Dioxide (SO2) - 40 µg/ m^3 ◆ Carbon Monoxide (CO) - 4 mg/m^3 for 8 hrs ◆ Suspended Particulate Matter (SPM) - 500 µg/m^3 ◆ Particulate Matter ($PM_{2.5}$) - 15 µg/m^3 ◆ Particulate Matter (PM_{10}) - 45 µg/m^3 ◆ Ozone (O_3) - 130 µg/m^3 ◆ Lead (Pb) - 1.5 µg/m^3	10 Locations: One location in each Katchi Abadi near sensitive receptor	Monthly	Contractor, CSC
Noise Level	24hr – Noise Levels	10 Locations:	Monthly	Contractor, CSC

Environmental and Social Aspect	Monitoring Parameters	Monitoring Locations	Monitoring Frequency	Responsibility
	◆ Day Time: 55 dB(A) ◆ Night Time: 45 dB(A)	One location in each Katchi Abadi near sensitive receptor		
Water Quality	◆ Sindh Environmental Quality Standards (SEQS) Drinking Water Quality Parameters	Worker Camps, Office Sites and Kitchen/Mess Areas	Monthly	Contractor, CSC
Waste Management	◆ Inspection of solid waste generation, collection, storage, recycling, and disposal ◆ Recording volumes of excavation and spoil generated, reused, sold, and stockpiled by location ◆ Recording waste volumes by type (kitchen and domestic, medical, batteries, electrical equipment, tires, rags, paper, scrap metal wastes, etc.) generated at various construction sites ◆ Recording the final disposal of each waste stream ◆ Calculating the rate of waste reuse/recycling ◆ Recording storage, transport, and disposal costs	All Project Sites, Worker Camps, focusing on areas where waste is stored / located	Fortnightly	Contractor, CSC
Soil Contamination	◆ Visual Inspection ◆ Recording of oil, fuel, and chemical spill incidents	All work areas, machinery parking areas, generator installation sites and workshops	Weekly	Contractor, CSC
Effluent Disposal	◆ Visual inspection for checking any bypasses or leakages in effluent disposal arrangements at camp and office sites	All Worker Camps/ Office Sites	Weekly	Contractor, CSC
ESS4: Community Health and Safety				
Community Health and Safety/Construction Traffic	◆ Status of Barricading at Trenches and Excavations	At sensitive receptor locations	Bi-weekly	Contractor, CSC

Environmental and Social Aspect	Monitoring Parameters	Monitoring Locations	Monitoring Frequency	Responsibility
Management and Safety/Access to Receptors	◆ Status of provision of Pedestrian access ◆ Status of piling-up of excavated material and pipes along trenches ◆ Status of provision of access at sensitive receptor locations ◆ Status of posting safety signage ◆ Status of traffic diversions ◆ Road safety incident records ◆ Lighting arrangements ◆ Provision of safety equipment and materials at sites			
SEA/SH incidents	◆ Status of workers interaction with public, nearby communities. ◆ Investigation of any SEA/SH incidents reported / communicated by workers or registered by communities in GRM	All Project Sites and Worker Camps	Weekly	Contractor, CSC
ESS10: Stakeholder Engagement and Information Disclosure				
Stakeholder Engagement	◆ Number and types of engagements ◆ Topics raised during engagement ◆ Number and types of community grievances ◆ Closure duration of grievances ◆ Claimant satisfaction of process and results grievance mechanism	Stakeholders Identified in Project's Stakeholders Engagement Plan (SEP)	Monthly	Contractor, CSC, PIU
Community Grievances	◆ Numbers of grievances ◆ Types of grievances ◆ Number of grievances related to dust, noise, traffic, restricted access, and any abuses related to project workers. ◆ Appropriate close-out measures and actions to prevent recurrence	Affected Communities	Monthly	Contractor, CSC, PIU

Environmental and Social Aspect	Monitoring Parameters	Monitoring Locations	Monitoring Frequency	Responsibility
	◆ Grievances closed out within timeframes			
Operation Phase				
ESS2: Labor and Working Conditions				
Occupational Health and Safety (OHS) Plan at Pump Rooms	◆ Implementation status of the OHS plan ◆ Availability of fire extinguishers ◆ Provision and utilization of PPEs by workers ◆ Sodium hypochlorite handling and storage ◆ Posting of Safety Data Sheet (SDS) for sodium hypochlorite.	All pump rooms	Daily	Pump Room Operator

4 ESMP Implementation (Institutional Arrangements, Trainings, Reporting, and Cost), GRM and Stakeholders Engagement and Consultations

4.1 Institutional Arrangements for ESMP Implementation during Construction Phase

The key players involved in the implementation of the ESMP during the project's construction phase are the Sindh Environmental Protection Agency (SEPA), Project Implementation Unit (PIU), Third-party Validation (TPV) Consultation, Construction Supervision Consultant (CSC), and Contractor(s).

The PIU KWSSIP-2 will make Contractors bound through contract documents to implement the ESMP and other terms and conditions of the Environmental Permit of SEPA. The whole ESMP will be included in the contract documents. Construction camps will be established after necessary approvals and submission of SSESMP, Camp Management Plan, and other site-specific plans to be developed relevant to agency requirements before the commencement of new works. The organizational setup for the implementation of the ESMP during the construction phase is provided in **Figure 4-1**.

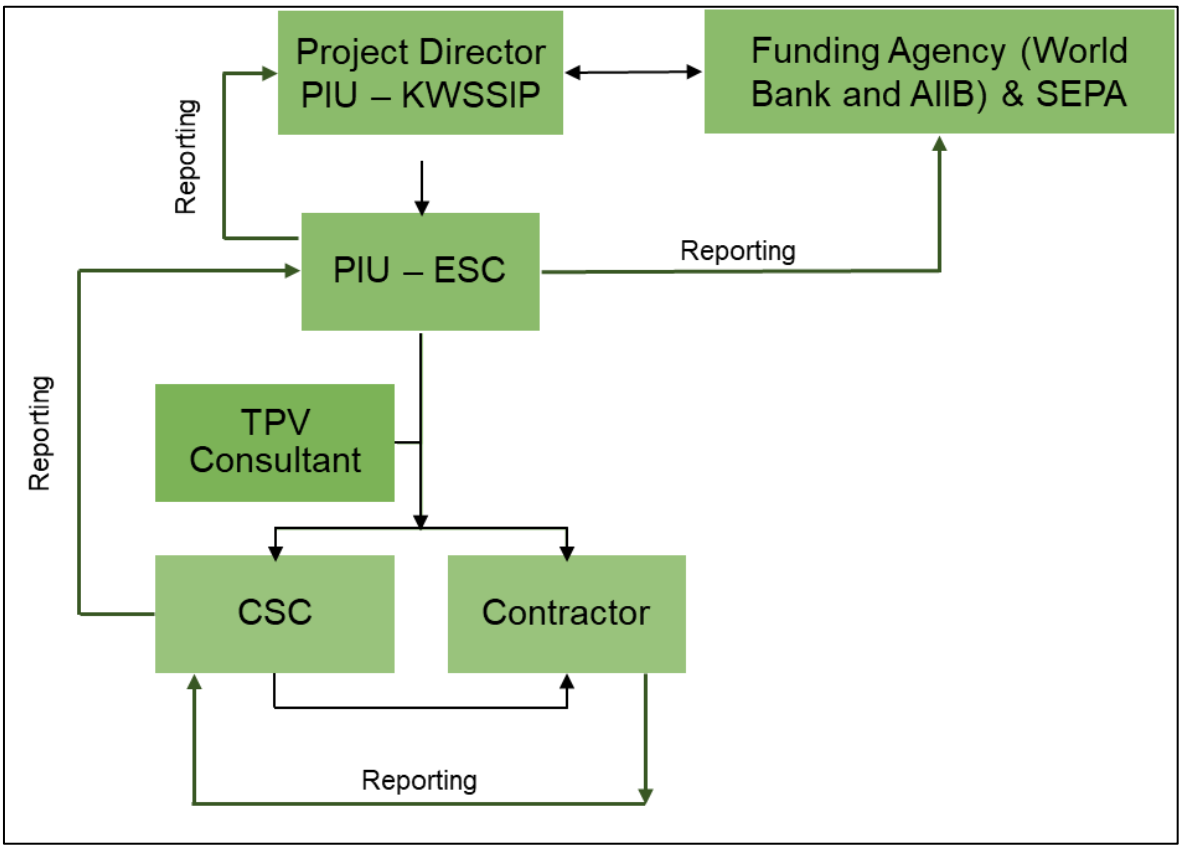


Figure 4-1: Organizational Setup for Implementation of ESMP during Construction Phase

4.1.1 Roles and Responsibilities

a) SEPA

As per the Sindh Environmental Protection Act, 2014, the Sindh Environmental Protection Agency (SEPA) approves the environmental and social impact assessment (ESIA) reports. SEPA will be responsible for granting a No Objection Certificate (NOC) for the ESMP before initiation of construction activities.

b) Project Implementation Unit (PIU)

Project Implementation Unit (PIU)'s Project Director (PD) is the executive head of the entire KWSSIP-2 project. He is responsible for necessary policy, administrative, and financial decisions and actions for effective and timely project implementation as per the approved framework and schedule. He will be responsible for overall project implementation, including environmental and social management, and hiring contractors and consultants. PD PIU will approve the overall project and the ESMP budget and finances. The Government of Sindh will allocate these finances with assistance from the WB / AIIB.

c) Environment and Social Cell (ESC)

The ESC has already been established in PIU, which currently consists of five specialists – two environment specialists, two social safeguard specialists, and a gender specialist at the project preparation stage. However, one OHS specialist, one gender officer, and four E&S officers will be added in the project implementation stage. The ESC will be responsible for implementing ESMP and other related tasks. They will be responsible for ensuring the ESMPs are included in the contract documents and supervision of ESMPs implementation. The ESC under PIU will take care of the environmental and social aspects of the project activities. ESC will arrange environmental and social monitoring, prepare compliance reports, and submit them to PD PIU for further submission to the WB, AIIB, and SEPA to fulfill their monitoring, reporting, and compliance requirements for environmental and social aspects of the project. The ESC will ensure compliance with ESMP during the construction phase. Compliance will require measurements of environmental and social parameters and observations at the construction sites to evaluate compliance. The PIU will hire the services of an independent environmental and social consultancy firm as Third Party for Third Party Validation (TPV).

- Furthermore, they will be responsible for:
- Ensuring that the required environmental and social training is provided to the concerned staff;
- Make sure that all the contractual obligations related to environmental and social compliance are met;
- To carry out regular site visits to the construction sites to review the environmental and social performance of the Contractor(s);
- Check regularly the ESMP implementation status of the project during the construction phase is being properly carried out;
- Review monitoring reports for the progress of environment and social-related activities;
- Make sure that the Contractor is implementing the additional measures suggested by the SC in environmental and social monitoring reports;

- Document and disclose monitoring results and identify necessary corrective and preventive actions in the periodic monitoring reports, and make follow-up on these actions to ensure progress toward the desired outcomes;
- Assist in the assessment of the livelihood loss and negotiation with the affected persons for fixation of compensation to be paid for temporary impacts;
- Assist the Contractor for the timely payments of negotiated prices;
- To assist the Contractor in obtaining necessary approvals from the concerned departments;
- Oversee the compliance of all the monitoring programs as given in ESMP;
- Report immediately to WB when environmental and social incidents and accidents occur;
- Maintaining interface with the other lined departments/stakeholders and
- Reporting to the SEPA on the status of ESMP implementation.

d) Third-Party Validation (TPV) Consultant

The Third-Party Validation (TPV) will be done through independent E&S Specialists. They will monitor the environmental and social parameters and conduct field surveys at the construction sites to evaluate compliance levels. They will be engaged to conduct the external and independent monitoring of the implementation of the ESMP. This external monitoring agency is to conduct biannual, annual, and final evaluations of the ESMP implementation and recommend changes if and when necessary to the ESC.

The roles and responsibilities of a third-party environmental consultant will be:

- Carry out independent monitoring at critical locations during the construction phase and monitoring the implementation of ESMP at the project area;
- Monitor GRM and resolution of complaints;
- Inform ESC, WB, and AIIB of any significant impacts arising during construction;
- Observe and amend/prepare (if required) corrective action plans; and
- Monitor plan implementation along with project Implementation Consultant.

e) Construction Supervision Consultants (CSC)

PIU will engage Construction Supervision Consultants (CSC) for the project. The CSC will conduct day-to-day monitoring of ESMP implementation, prepare monthly monitoring reports for each site, and submit them to ESC. The ESC will review the report, discuss it with the CSC, and finalize the findings. In case of noncompliance from the contractors, the CSC will have the authority to halt the construction activities or impose penalties as per the contract conditions. The CSC will submit the final monitoring and evaluation reports to PIU as per the periodic reporting mechanism (defined later in the document). PIU will submit these reports to WB for their review and further action. Also, these reports will be submitted to SEPA per the frequency mentioned in the construction phase 'Environmental Approval' requirements. The roles and responsibilities of CSC will be:

- Review and approve the Contractor's management plans;

- To oversee and supervise the performance of the Contractor to make sure that the Contractor (s) is complying with ESMP;
- Ensuring that the day-to-day construction activities are carried out in an environmentally and socially sound and sustainable manner;
- Maintain close coordination with the Contractor and ESC;
- Preparing training materials and implementing training programs;
- Ensure the implementation of the mitigation measures suggested in ESMP;
- To supervise and monitor environmental and social activities being performed at the site;
- To organize periodic environmental and social training programs and workshops for the consultant's and Contractor's staff;
- Periodic reporting as mentioned in ESMP; and
- Suggest any additional mitigation measures (if required).

The E&S team of CSC of the proposed project will consist of the following personnel:

- E&S Team Leader (one specialist – M.Sc. in Environmental Engineering with more than 20 years of professional experience, worked on at least two implementation projects as SC)
- Environmental Specialist (one specialist – M.Sc. in Environmental Engineering with ten years of professional experience, worked on at least one implementation project SC)
- OHS Specialist (one specialist – M.Sc. in Environmental Engineering with OHS Certification, ten years of professional experience, worked on at least one implementation project as OHS - SC)
- OHS Officers (two professionals – B.Sc. in Environmental / Other Engineering with Safety Certifications and 03 years of professional experience, worked on at least one implementation project SC)
- Social Safeguard Specialist (one specialist – M.Phil. in Sociology with ten years of professional experience, worked on at least one implementation project SC)
- Gender Specialist (one specialist – M.Phil. in Sociology, Gender Study or equivalent with ten years of professional experience, worked on at least one implementation project SC)
- The same firm may qualify as CSC for other sub-projects under KWSSIP-2. In such a case, the abovementioned staffing requirements will be applicable separately for each sub-project.

f) Contractor

Contractors will be bound to appoint site-based Environmental and Social Experts with relevant educational backgrounds and experience for each site. The contractors will be responsible for implementing measures to avoid or minimize adverse environmental and social impacts during construction. Contractors are required to prepare Site-Specific ESMP (SSESMP) demonstrating how they will comply with the requirements of ESMP before mobilization and obtain approval from the ESC and CSC. Contractors' Environmental and Social Experts will carry out the following activities:

- Prepare SSESMP and obtain its approval from CSC;

- Implementation of the mitigation measures as detailed in the ESMP, SSESMPs, and associated Environmental Health Safety and Social (EHSS) Plans at each construction site and throughout the project area;
- Contractors will be bound through the contract to take actions against all the special and general provisions of the contract document;
- Contractors will ensure the compliance of ESMP recommendations and will also be responsible for effective liaison;
- Provision of proper PPEs to the workers and train them for their proper use;
- Prepare and submit the monthly, quarterly, biannually, annual, and final progress reports to CSC;
- Report immediately to CSC and ESC when environmental and social incidents and accidents are occurred;
- To conduct the EHS training to the workers / labor; and
- Coordinate with CSC and ESC.

The Contractor will be required to have suitably qualified and experienced persons to function as environmental, social and OHS Specialists, who will be working in close liaison with the ESC and CSC. Appropriate numbers of the following key personnel are required in the Contractor's team:

- Environmental Engineer (4 positions) – B.Sc. in Environmental Engineering with 5 years of professional experience in project implementation.
- HSE Officer (4 positions) – B.Sc. in Environmental Engineering with OHS Certification and 5 years of professional experience in project implementation.
- Gender / GRM / Social Development Specialist (4 positions) – M.Sc. in Sociology with 05 years of professional experience in project implementation.
- Flag man (4 positions) – Valid work experience at project implementation site.

4.2 Institutional Arrangements for ESMP Implementation during Operation Phase

The proposed project will be administrated by the Karachi Water & Sewerage Corporation (KWSC) during the operation and maintenance (O&M) phase. In the organizational hierarchy of KWSC, Deputy Managing Director Technical Services (DMDTS), will be overall responsible for the O&M of water supply and sewerage infrastructure. The Chief Engineer of each district will be the sole responsible for the utility services in his respective district. The project operation will be under direct jurisdiction of Engineers and Plant Managers respectively. The monitoring and compliance of operational phase ESMP measures will be the responsibilities of the respective area engineers and pump room operators. These personnel will report to the DMDTS for the compliance and monitoring of ESMP. The staff will be responsible for the following:

- Coordinating to monitor environmental and social compliance during operation;
- Monitoring and managing compensatory tree plantations at places to be identified by the PIU at execution stage;

- Reporting on the O&M progress of environmental and social compliance to the SEPA (if required); and;
- Assessing as well as mitigating potential environmental and social impacts of the proposed project operation;

4.3 ESMP Trainings

Training programs will be implemented during the project life cycle to ensure all staff receive the required training in both general and job-specific issues. Training will be provided to all recruits, and continual refresher courses will be organized for the existing staff. Implementing the E&S training would ensure that the requirements of the ESMP are transparent to all project personnel and followed accordingly throughout the project lifespan. Moreover, the training programs also ensure that all site personnel are well aware of their work responsibilities, the E&S requirements of the project, and how they will be implemented and monitored on-site. They will also be introduced to the potential impacts and risks of the project, including the mitigation and control measures adopted to address those impacts and risks and where to implement the appropriate measures.

Additionally, the training would make the staff aware of the roles of PIU, the CSC, the TPV, and the Contractors regarding environmental and social issues. Each organization will be responsible for providing training to their staff before the start of the project and during the project execution. Training will cover all staff levels, including management, supervisory personnel, and skilled and unskilled workforces.

4.3.1 ESMP Implementation Training during Pre-construction Phase

Training will be organized by CSC for PIU, CSC and Contractor Management & Workers and it will provide awareness on: waste management, driving safety, standard operating procedures (SOPs) for construction works; community and occupational health and safety, core labor standards, code of conduct, avoidance of interaction with communities, outcomes of GBV/SEA/SH conducts, transmissible diseases, applicable environmental and social laws, sensitivity of the project area and key findings of the ESMP etc.

4.3.2 ESMP Implementation Training during Construction Phase

The training during the construction phase includes the following:

- Workers will be provided with weekly ESHS awareness sessions, daily toolbox talks, and induction training during worker appointments, covering topics including OHS/CHS protocols, avoidance/protocols of community interaction, etc.
- Drivers and operators would be regularly trained before and during field operations regarding road safety, defensive driving, waste disposal, cultural values, and social sensitivity.
- All site personnel would be educated about the proper use of personal protective equipment, camp operations and management, waste disposal, resource conservation, and housekeeping through regular weekly training.
- Workers will be provided with training on ESHS management related to site restoration works at the end of the construction phase.

4.3.3 Capacity Development Trainings

In addition to regular ESMP and H&S training, the Contractor will be required to organize capacity development training once before construction and monthly throughout the construction period for the key ESHS management staff, site supervisors, and project management personnel belonging to the Contractor, PIU, and CSC for sensitizing them on effective ESHS management, relevant WB ESS and GoS requirements on ESHS management. An adequate budget for capacity development training in the ESMP cost has been kept.

A tentative training plan is presented in **Table 4-1**.

Table 4-1: Training Plan during the Construction Phase

No.	Training Activity	Participants	Trainer	Mode of Training	Content	Schedule
1.	Site Orientation and Induction	Contractor and Construction Supervision Consultant (CSC)	PIU KWSSIP-2	Presentation / Lecture	Awareness about site, working protocols	Once for everyone
2.	ESMP and Environment Code of Practices (ECPs)	Contractor	CSC and PIU KWSSIP-2	Presentation	Awareness and applicability of ESMP and ECPs	Monthly
3.	Emergency Response and Use of Fire Extinguishers	Contractor	CSC and PIU KWSSIP-2	Presentation	Potential natural and other hazard/emergencies and dealing with emergency and fire to minimize damage	Quarterly
4.	Resettlement Related Issues and Grievance Redress	Contractor	CSC and PIU KWSSIP-2	Presentation	Awareness on WB ESS5 (Involuntary Resettlement)	Quarterly
5.	Labor Management Procedures	Contractor	CSC and PIU KWSSIP-2	Presentation	Awareness on WB ESS2 (Labor and Working Conditions)	Quarterly
6.	Gender Aspects including GBV	Contractor	CSC and PIU KWSSIP-2	Presentation	Awareness on GBV, gender equality, gender related issues and their redress; awareness regarding Gender Action Plan (GAP)	Quarterly
7.	Stakeholder Engagement	Contractor	CSC and PIU KWSSIP-2	Presentation	Interaction with the Project Affected Peoples (PAPs) and Other Interested Parties, Awareness on WB ESS10 (Stakeholder Engagement)	Quarterly
8.	Awareness workshop regarding COVID-	Contractor	CSC and PIU KWSSIP-2	Presentation	Risk, prevention, and available treatment	Semiannual

No.	Training Activity	Participants	Trainer	Mode of Training	Content	Schedule
	19 and other vector borne diseases					
9.	First Aid and Cardiopulmonary resuscitation (CPR)	Contractor	CSC and PIU KWSSIP-2	Presentation	Onsite first aid procedures	Quarterly
10.	Compliance of SEPA NOC (Environmental Approval) and WB ESS	Contractor	CSC and PIU KWSSIP-2	Presentation	Awareness on SEPA NOC, rules, guidelines, regulation, and standards for satisfactory compliance	Semiannual

A comprehensive training manual will be developed and implemented by the Contractor with prior consent of CSC environmental staff.

4.4 Reporting

The Contractor will prepare monthly reports detailing the progress on implementing the Project's Environmental, Social, Health and Safety (ESHS) Safeguards Requirements included in the ESMP. The PIU-ESC will also produce quarterly reports with CSC and Contractors' assistance.

Contractor's Monthly ESHS Reports. The monthly reports will provide the implementation status of the mitigation measures in the ESMP. It includes updates on the outcome of the field inspections carried out by the Contractor ESHS Teams and the status/results of ESHS monitoring as required under monitoring plans. The report will also provide details on all sorts of training conducted by the Contractor during the reporting month, details of complaints registered at the Project's GRM, and actions taken by the Contractor to resolve complaints.

CSC's Monthly ESHS Reports. Based on the Contractor's monthly reports, the CSC will validate the information provided in the Contractor's report, indicate the gaps in their field observations, and evaluate the Contractor's performance on implementing the project's ESHS safeguards. CSC Monthly Reports will also provide details on Corrective Action Plans (CAPs), agreed timelines for resolution of active ESHS issues, the status of penalties imposed by the CSC on Contractors for continual noncompliance, and the way forward suggested by the CSC. The report will also provide expert analysis on the adequacy of training organized by the Contractor, advice for the Contractor regarding realignment of the training program, independent analysis of GRM activities, and details/outcomes of stakeholder engagement activities carried out during the reporting month.

PIU's Quarterly Progress Reports on ESHS Management. The PIU will prepare the reports with assistance from CSC and Contractors. The report will provide a detailed account of quarterly ESHS Safeguards implementation status, mitigation measures and preventive actions undertaken, environmental and social monitoring activities conducted, details of monitoring data collected, analysis of monitoring results, particularly the noncompliance, recommended mitigation and corrective measures, GRM data, stakeholders engagement activities, ESHS training conducted, and environmental and OHS regulatory violations observed. The monitoring reports will also be submitted to the SEPA, if required, under ESMP Approval Conditions.

PIU Reporting to WB. PIU will prepare and submit quarterly monitoring reports to World Bank throughout project implementation on the ESHS performance of the project, including but not limited to the implementation of the ESCP, status of preparation and implementation of E&S instruments required under the ESCP, stakeholder engagement activities, functioning of the grievance mechanism and other aspects that the reporting would need to consider, as relevant. PIU will also submit to World Bank the Contractor's and CSC's monthly reports on ESHS performance following the metrics specified in the respective bidding documents and contracts.

Moreover, PIU will promptly notify the Bank no later than 48 hours after learning of any incident or accident related to the project that has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers, including, among other things, cases of sexual exploitation and abuse (SEA), sexual harassment (SH), and accidents that result in death, serious or multiple injuries or other examples of incidents and accidents, as appropriate for the type of operation. The incident report should provide sufficient detail regarding the scope, severity, and possible causes of the incident or accident, indicating immediate measures taken or planned to address it, and any information provided by any contractor and supervising firm, as appropriate.

Project's EHS Completion Report. At the end of construction, the PIU - ESC will submit a Project Completion Report, which will summarize the overall environmental and social impacts/risks that occurred during the project implementation, efforts and measures taken for mitigating or offsetting the impacts, constraints/limitations faced during execution for resolving any particular ESHS issues, overall ESHS performance of Contractor and CSC and lessons learned.

4.5 Indicative ESMP Implementation Costs

Estimated cost estimates for the Contractor's staffing, implementation of mitigation measures, preventive actions, and monitoring are presented in **Table 4-2.** The total cost of ESMP implementation is estimated at **PKR 146.844 Million**.

Table 4-2: Indicative ESMP Implementation Cost

S. No	Description	Packages	Samples / No	Frequency / Months	Rate / Unit	Amount
A- PRE-CONSTRUCTION PHASE						
1	Air Monitoring (Ambient Air)-24 Hrs as per SEPA standards	4	3	One time	50,000	600,000
2	Vehicles, Generators and other emitting sources of fumes	4	3	One time	50,000	600,000
3	Noise Quality (24 hours specified in SEQS) – Pre-Construction Phase	2	3	One time	10,000	20,000
4	Waste Water samples collection and Laboratory analysis (SEQS parameters) - Construction Phase	4	3	One time	50,000	600,000

S. No	Description	Packages	Samples / No	Frequency / Months	Rate / Unit	Amount
					TOTAL-A	**1,820,000**
B- CONSTRUCTION PHASE (IMPLEMENTATION PHASE)						
5	Environmental Engineer	4		24	200,000	19,200,000
6	HSE Officer	4		24	150,000	14,400,000
7	Gender Specialist and Social Development specialist	4		24	200,000	19,200,000
8	Flag man	4	4	24	50,000	4,800,000
9	Air Monitoring (Ambient Air)-24 Hrs as per SEPA standards	4	6	Quarterly	50,000	1,200,000
10	Vehicles, Generators and other emitting sources of fumes	4	6	Quarterly	50,000	1,200,000
11	Noise Quality (24 hours specified in SEQS) – Purchase of Decibel meter	4		One time	10,000	40,000
12	Waste Water samples collection and Laboratory analysis (SEQS parameters) - Construction Phase	6	6	Quarterly	50,000	1,800,000
13	Fixed cost at project sites (PPEs, In-house, Shoes, Safety helmets, Gloves, googles, Harness belts, Jackets, septic tanks, installation of safety barriers)	4		24	500,000	48,000,000
14	Provision of First Aid Facility including medicine	4		24	50,000	4,800,000
15	Capacity Development Trainings: ESHS Management, Occupational & Community Health and Safety, Disease Prevention, Maintaining Community Values – Pre - Construction Phases	4		24	50,000	4,800,000
16	Fire Safety Equipment, Installation of Noise / Safety Barriers,	4		Once	700,000	2,800,000

S. No	Description	Packages	Samples / No	Frequency / Months	Rate / Unit	Amount
	Signage, Site Waste Management (Bins / Skips) etc.					
17	Key Mitigation Measures: Sprinkling/Barricading /Solid Waste Management etc.	4	24		100,000	9,600,000
					TOTAL-B	**131,840,000**
					TOTAL AMOUNT (A-B)	**133,660,000**
					ESCALATION AND CONTIGENCIES ON -B **10%**	**13,184,000**
					GRAND TOTAL	**146,844,000**

4.6 Grievance Redress Mechanism

Grievance Redress Mechanism (GRM) intends to resolve a complaint as quickly and at as low a level as possible to avoid a minor issue becoming a significant grievance. Irrespective of the process stage, a complainant can pursue the grievance through the court following the law.

The Grievance Redress Committee (GRC) will work at site, sub-project and PIU levels. The E&S and engineering staff of PIU, in coordination with site staff, will inform the project affected and community members about the GRCs and their mechanism through consultations and by posting at prominent places. The complaints received through any media will be screened by type and category. These complaints will be registered in the Community Complaints Register (CCR), where the name and address of the complainant, date, description of the complaint, and action taken will be recorded. The following procedure will be used to redress the grievances:

- First, complaint resolution will be attempted to be addressed at community-GRC through the involvement of the field E&S/engineering staff. The community GRC will decide within five working days of receipt of the complaint. If unsettled, a grievance can be lodged to the sub-project GRC by the complainant or by the GRC;
- Sub-project GRC will acknowledge the receipt within two working days of the complaint lodging. Initial review and consultation with the sub-project GRC will be conducted within five working days of receipt of the complaint. If required, sub-project GRC will advise the E&S/engineering specialists to conduct field visits in consultation with the aggrieved persons/parties and the local community and submit a fact-finding report. Preferably, the fact-finding will be completed within eight working days of receiving complaints. Sub-project GRC will decide within ten working days of receipt of the complaint. If unresolved, a grievance will be lodged to the (PIU-GRC) by the complainant or by the GRC, and
- The PIU-GRC will decide within 20 working days of receipt of the complaint. If the complainant is still unsatisfied, they can pursue further by submitting the case to the appropriate court of law.

All E&S issues will be dealt with according to the above GRM procedures. The GRCs will hear and clarify with the complainant (if required) about the E&S issue and will conclude and communicate their recommendations for further implementation. The complainant will be kept informed during the process, and the GRC decision will be communicated accordingly. In case of any delay, the complainant will be

informed of the progress and process of their grievance. The GRC proceedings will be documented step by step, and all records will be maintained and summarized in the project progress and internal monitoring reports.

4.7 Stakeholders Engagement and Consultations Planned for the Project's Life-cycle

The project will require public consultation and disclosure activities and mechanisms to continue beyond the ESA process throughout the project's lifecycle to comply with WB ESS 10. The planned stakeholders' engagement activities in **Table 4-3** are aligned with the SEP requirements.

Stakeholder engagement activities will be documented and reported as part of reporting requirements. The profiles of the stakeholders being consulted will be established, and disaggregated gender and other socially relevant data will be presented. Any special measures to include disadvantaged groups, for instance, physically challenged persons from affected communities, will also be documented.

Table 4-3: Planned Stakeholder Engagement Activities for the Project

Target stakeholders	Topic(s) of Engagement	Use of Method (s)	Location / Frequency	Responsibilities
Construction Phase				
Project Affected People (PAPs) ◆ People potentially affected by project activities ◆ People residing in project area vulnerable and disadvantaged households	◆ Grievance Mechanism/H&S Impacts, ESMP, ◆ CHS, Community Concerns, Concerns, Employment Opportunities/Project Status	◆ Public meetings, open houses, trainings/workshops ◆ Separate meetings as needed for women and vulnerable/disadvantaged ◆ Individual outreach to PAPs as needed ◆ Distribution of written information: brochures, posters, flyers, website information boards in Project area ◆ Notice board(s) at construction sites ◆ Grievance mechanism ◆ KWSSIP monthly newsletter	◆ Quarterly meetings during construction/communication through mass and social media as needed ◆ Notice boards updated weekly ◆ Routine interactions ◆ Brochures in local offices	(PIU KWSSIP / CSC) Social Development and Environment Specialists
Other Interested Parties (External) ◆ Governmental committees for land use and compensation ◆ Project area residents and representatives in communities	◆ Project scope, rationale and E&S ◆ Principles/grievance mechanism ◆ Project status ◆ WB compensation requirements	◆ Face-to-face meetings ◆ Joint public/community meetings with PAPs	As needed (monthly during construction phase)	(PIU KWSSIP / CSC) Social Development and Environment Specialists
Other Interested Parties (External) ◆ Press and media NGOs ◆ Businesses and business organizations ◆ Workers' organizations ◆ Academic institutions	◆ Project information – scope and rationale and E&S principles ◆ Project status H&S impacts ◆ Employment opportunities	◆ Public meetings, open houses, trainings/workshops ◆ Distribution of written information: brochures, posters, flyers, website, Information boards in Project area	Same as for PAPs	(PIU KWSSIP / CSC) Social Development and Environment Specialists

Target stakeholders	Topic(s) of Engagement	Use of Method (s)	Location / Frequency	Responsibilities
◆ General public, ◆ Jobseekers	◆ Environmental concerns ◆ Grievance mechanism process	◆ Notice board(s) at construction sites ◆ Grievance mechanism		
Other Interested Parties (Internal) ◆ Other KWSSB staff, CSC, Contractor, sub-contractors, service providers, suppliers and their workers	◆ Project information: scope and rationale and E&S principles ◆ Training on ESMP requirements and other sub-management plans ◆ Worker grievance mechanism	◆ Face-to-face meetings ◆ Trainings/workshops ◆ Invitations to public/community meetings	Daily, as needed	(PIU KWSSIP / CSC) Social Development and Environment Specialists
Operation and Maintenance Phase				
PAPs ◆ People residing in project area ◆ Vulnerable/disadvantaged households	◆ Satisfaction with engagement activities and GRM ◆ Grievance mechanism process ◆ Damage claim process	◆ Outreach to individual PAPs ◆ KWSSIP website ◆ Grievance mechanism ◆ KWSSIP monthly newsletter	◆ Outreach as needed meetings in affected Project area ◆ Communities (as needed/requested) monthly newsletter	KWSC Management
Other Interested Parties (External) ◆ Press and media ◆ NGOs ◆ Businesses and business organizations ◆ Workers' organizations ◆ Academic institutions ◆ Local Government ◆ Departments in Project area ◆ General public	◆ Grievance mechanism process ◆ Issues of concern ◆ Status and compliance report	◆ Grievance mechanism ◆ KWSSIP website ◆ Face-to-face meetings ◆ Submission of reports as required	As needed	KWSC Management

List of Annexures

Annexure - 1: Project Background

Karachi is Pakistan's largest city along with its economic and financial hub, and main port[1]. The city contributes 15% of the national Gross Domestic Product (GDP) and the largest share of national tax revenues, industrial employment, manufacturing, and high-end services[2]. In 2006, it was estimated that 62% of Karachi's population lived in Low-income settlements generally called as 'Katchi Abadis'[3]. The economic and industrial activities in Karachi gave a rapid rise to the rural-urban migration which in turn further amplified the population of the Katchi Abadis. The settlements densified over time as political instability prevented coherent urban planning and now, Karachi is home to around 580 Katchi Abadis [4]. Most of the Katchi Abadis lack connectivity with the main water and sanitation network / infrastructure of the city. Water does not reach the extremity of the city, and most of the Katchi Abadis along with many settled areas of the city, are supplied through water tankers[5]. Open drainage lines in these settlements and their non-connectivity with the KWSC's main sewers, often cause outbreak of various diseases and solid waste blocks the city's storm-water drains[6].

Karachi Water and Sewerage Services Improvement Project (KWSSIP)

In order to address the water supply and sewerage issues, KWSSIP has been initiated as a phased program and agreed on a financing approach through SOPs with four overlapping phases. Following SOPs have been conceived under KWSSIP:

- SOP-1 (KWSSIP-1): Focuses on reforms, maintenance and rehabilitation
- SOP-2 (KWSSIP-2): To scale-up work done under the SOP-1
- SOP-3: Will focus on increasing water production and to ensure the additional wastewater created can be treated
- SOP-4: Will focus on improving services in informal settlements based on experience gained under the previous projects

These SOPs have been assessed to be the most suitable financing modality for the complex, long term challenge of addressing the serious water and sanitation service gaps in the rapidly growing mega city of Karachi.

Second Series of Project (SOP-2) or KWSSIP-2

The SOP-2 (or KWSSIP-2) involves scaling-up infrastructure rehabilitation and expansion, complemented by capacity building to raise operational performance and improvements to the enabling environment. KWSSIP-2 has the following components:

- **Component 1** is related to the capacity building and reform measures to improve the utility performance, including more reliable and energy efficient services.

[1] Pakistan Bureau of Statistics, 2017 census, provisional summary
[2] World Bank, Transforming Karachi into a livable and Competitive Megacity – A City Diagnostic and Transformation Strategy, Washington DC, 2018; p.2
[3] https://www.urbz.net/articles/katchi-abadis-karachi
[4] https://skaa.sindh.gov.pk/katchi-abadis-status
[5] https://pubs.iied.org/sites/default/files/pdfs/migrate/10560IIED.pdf?
[6] WWF - Situational Analysis of Water Resources of Karachi - 2019

- **Component 2** undertakes selected infrastructure, aimed at improving the water and sewerage services in Karachi, while also increasing the city's resilience to water shortages, floods, and saltwater intrusion.
- **Component 3** deals with project management and associated studies.

The selection, design and implementation of infrastructure subprojects identified under Component-2 is based on a set of screening criteria as part of a "project Risk Reducing Procedure" (PRRP) and ensure compliance with the WB's ESF 2018 requirements. Following are the sub-projects included under Component 2 of KWSSIP-2:

1. K-IV Augmentation (Installation of water main pipes to supply the treated water from K-IV Reservoirs to the existing water supply network);
2. Malir Basin Wastewater Interceptors and Treatment Plant (TP-IV)
3. Improving Water Supply and Sewerage in Ten (10) Low-Income Communities (Katchi Abadis);
4. Priority Sewer Network Rehabilitation and Extension – Eight (08) Scheme;
5. Priority Water Network Rehabilitation and Extension - Replacement of 1.8 m (72") Diameter Raising Main No. 02, Replacement of Old Pipri Main Sections, Sealing of PRCC Pipe Joints at New Pipri Mains, Installation of Open Channel Flow Meters and Intermittent Chlorination Facilities at 25 Pump Houses;
6. Reducing Energy Consumption at Dhabeji and NEK Pumping Stations; and
7. Rehabilitation of Existing and Construction of New Filtration Plants to assure treatment of all water currently produced.

Improved Water Supply and Sewerage in additional Low-Income Communities (Proposed Project)

The proposed Improved Water Supply and Sewerage in additional Low-Income Communities Project is covered under SOP-2 of KWSSIP-2. The project is aimed to upscale the support to ten selected informal settlements by improving and expanding water supply and sewerage infrastructure[7]. Major objectives of the project are as follows:

- Improved water utility services & sewerage facilities in the selected low-income settlements to provide the residents with better hygienic & environmentally friendly living conditions and suitable conditions for socioeconomic growth.
- Mapped and integrated Katchi Abadis water and sewerage network with the centralized KWSC Geographic Information System (GIS) system.
- Strengthened climate resilience of Katchi Abadis residents to withstand heat waves and flooding scenarios through the introduction of effective water and sewerage infrastructure.

Selection of Ten Additional Low-Income Communities (Katchi Abadis)

The selected low-income settlements for the proposed interventions are enumerated in **Table A1-1**.

[7] RFP for Group 02 ESA Studies

Table A1-1: List of Selected Low-Income Communities (Katchi Abadis)

S. No.	Selected Low-Income Communities (Katchi Abadis)
1.	Zia Colony
2.	Quid-e-Azam Colony
3.	Ali Mohammad Goth
4.	Mohammadi Colony
5.	Mujahid Colony
6.	Future Colony
7.	Sherpao Colony
8.	Sharif Colony
9.	Muslimabad Colony
10	Bilalabad Colony

It is pertinent to mention that out of the ten settlements, six settlements (Zia Colony, Quid-e-Azam Colony, Ali Mohammad Goth, Mohammadi Colony, Sharif Colony, Mujahid Colony) have been selected based upon a Multi Ranking Selection Criteria which involved screening of multiple factors including Technical Aspects (proximity to nearby water / sewer mains), Health / Need Aspects, Environmental / Socio-economic Aspects and Financial limits available for the development. The remaining four settlements (Future Colony, Sherpao Colony, Bilalabad Colony and Muslimabad Colony were chosen at PIU's prerogative based on the presence of higher number of polio cases (in the light of polio eradication program data on emergence of Super-High Risk Union Councils 'SHRUCs').Following project interventions will be made in each Katchi Abadi and these interventions have been assessed under this ESIA:

- **Water Supply Network:** Water Source Connection with Existing KWSC Line, Underground Tank for Storage, Overhead Tank with Pump House, Water Supply Pipeline Network equipped with 2 to 6 inches pipelines, Reducers and Valves (Gate Valves, Check Valves, Washout Valves, Air Release Valves, Fire Hydrant Valves).
- **Sewerage Network:** Sewerage Lines with 9 to 15 inches pipelines, Manholes and Connections with the nearest KWSC Main Sewerage Trunk Lines.

Further description of the project is provided later in the document.

Requirement to Conduct IEE / ESIA Study

The Sindh Environmental Protection Act - 2014 is the core environmental law for the proposed project. Under Section 17 of the Act, it is mandatory for the proponents of the projects to execute the Initial Environmental Examination (IEE) and / or Environmental and Social Impact Assessment (ESIA), where warranted, and get the approval from SEPA prior to commencement of any project works. Hence, for the proposed Improved Water Supply and Sewerage in additional Low-Income Communities Project, SEPA is the concerned authority with respect to environmental approvals.

The Review of IEE / ESIA Regulations, 2021 of SEPA provides the necessary details on the preparation, submission and review of the Environmental Checklist (EC), IEE and the ESIA reports. The project is expected to cause site specific and low intensity impacts, whereas the implementation of mitigation measures will further reduce the magnitude of these impacts. Keeping in view this, the proposed Improved Water Supply and Sewerage in additional Low-Income Communities Project falls under the following category defined by the SEPA:

Schedule II – Projects Requiring an IEE

Category H – Water Supply and Filtration Plants

Similarly, in terms of the WB ESF (2018), the proposed project has been classified as Environmentally and Socially Moderate, therefore, the combined E&S risk rating is "Moderate Risk" for which an ESIA is required. To fulfil WB ESF, 2018, an ESIA study has been conducted for the proposed Improved Water Supply and Sewerage in additional Low-Income Communities Project. As per World Bank ESF terms, ESIA is the instrument closest to an IEE.

This ESIA will also be submitted as an IEE to SEPA by KWSSIP to initiate the process of SEPA approval. Since SEPA requirements are less stringent than WB, a separate document with lesser headings will be submitted to SEPA. SEPA review process takes approximately forty- five (45) days for granting approval of the IEE.

Other Environmental and Social Studies

Besides this ESIA, the following documents prepared for the whole KWSSIP-2 project[8], also apply to the proposed project:

- Environmental and Social Commitment Plan (ESCP);
- Stakeholder Engagement Plan (SEP); and
- Labor Management Procedures (LMP).

Demarcation of Katchi Abadis and ESIA Study Area - Area of Influence (AoI)

Scanned maps were acquired by the consultants from the Sindh Katchi Abadis Authority (SKAA) and boundaries were digitized and marked in GIS. Field visits were also performed for the confirmation of Katchi Abadi boundaries. These digitized maps were utilized for marking the footprint of project interventions for Environmental and Social assessment.

The area of influence (AoI) covers the areas likely to be directly or indirectly impacted by the Project, i.e., Direct Impact Area (DIA) and Indirect Impact Area (IIA). DIA includes the core project construction sites where direct impacts of construction activities are envisaged such main trenching areas. IIA

8 For other sub-projects under KWSSIP-2, a number of relevant E&S studies have been carried out including Ecological Assessment and Biodiversity Action Plan (BAP); ESIA for K-IV Augmentation Works; ESMPs and RPs for Water Supply and Sewerage in Additional Low-Income Communities (Katchi Abadis), Priority Sewer Network Rehabilitation and Extension and Rehabilitation of Wastewater Pumping Stations, Priority Water Network Rehabilitation and Extension, Reducing Energy Consumption, and Rehabilitation of Existing and Construction of New Filtration Plants.

includes areas / communities adjacent to the core project construction sites that may experience impacts (e.g., nuisance associated with traffic congestion, community safety, dust or noise etc.) during construction or operation phases of the Project.

Table A1-2 defines the Areas of Influence (AoI) covering both Direct Impact Area (DIA) and Indirect Impact Area (IIA) which have been considered for the assessment of impacts. The extent of the IIA has been determined by the reach of impacts such as noise and air pollution etc. Individual location maps of the Katchi Abadis selected for proposed interventions are provided in **Figure A1-1**.

Table A1-2: Project Area of Influence

Project Components / Sites	Direct Impact Area (DIA)	Indirect Impact Area (IIA)
Laying / Installation of Water and Sewerage Pipelines – Project Intervention Areas of: 1. Zia Colony 2. Quid-e-Azam Colony 3. Ali Mohammad Goth 4. Mohammadi Colony 5. Mujahid Colony 6. Future Colony 7. Sherpao Colony 8. Sharif Colony 9. Muslimabad Colony 10. Bilalabad Colony	Main construction / trenching area, space for the movement of workers and spaces for temporarily stocking the excavated material along excavated trenches.	Façade to Façade for Katchi Abadis Streets (Ranging between 5 to 10 feet) and Major Roads surrounding Katchi Abadis to be used for delivering construction material

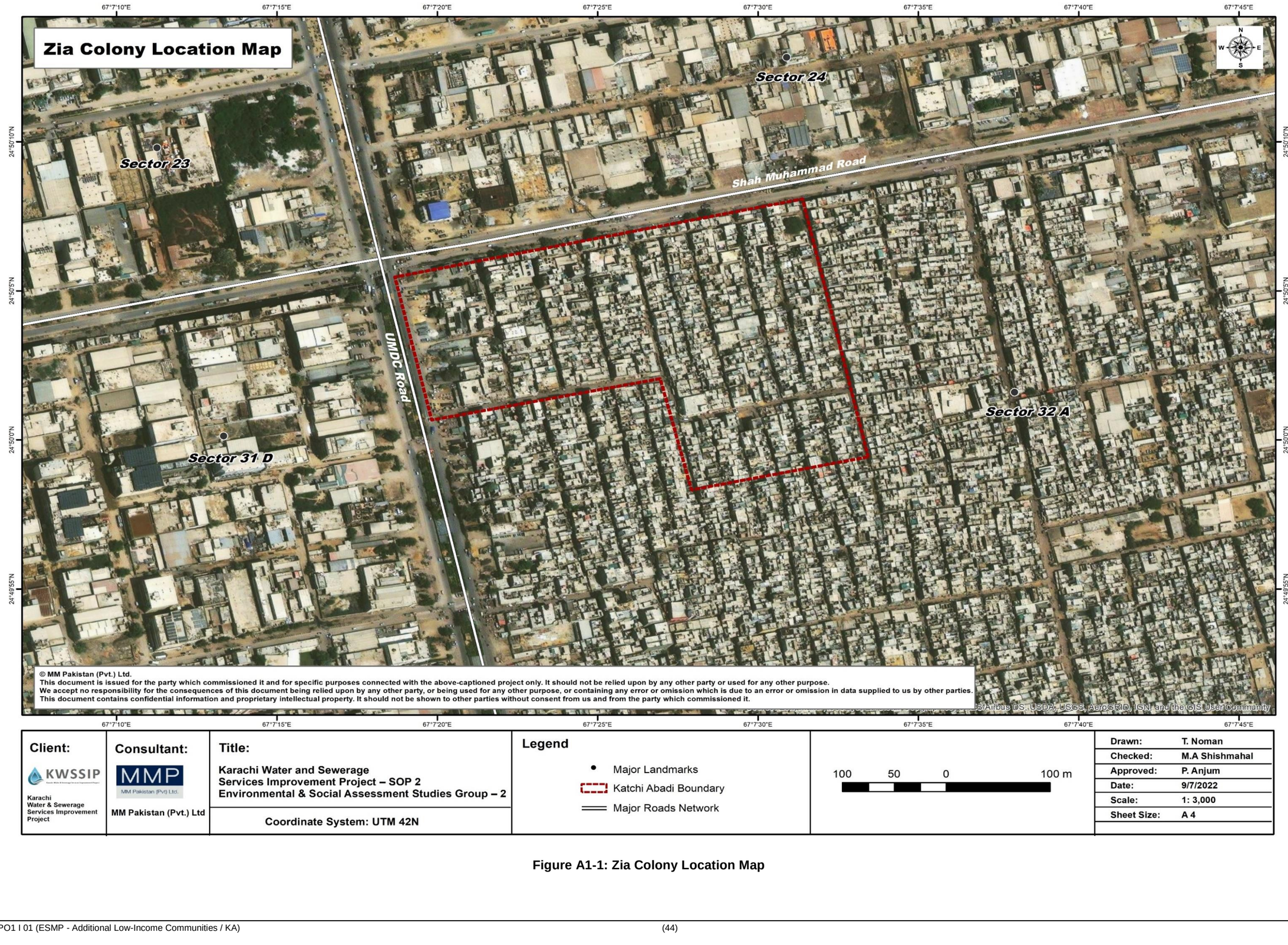


Figure A1-1: Zia Colony Location Map

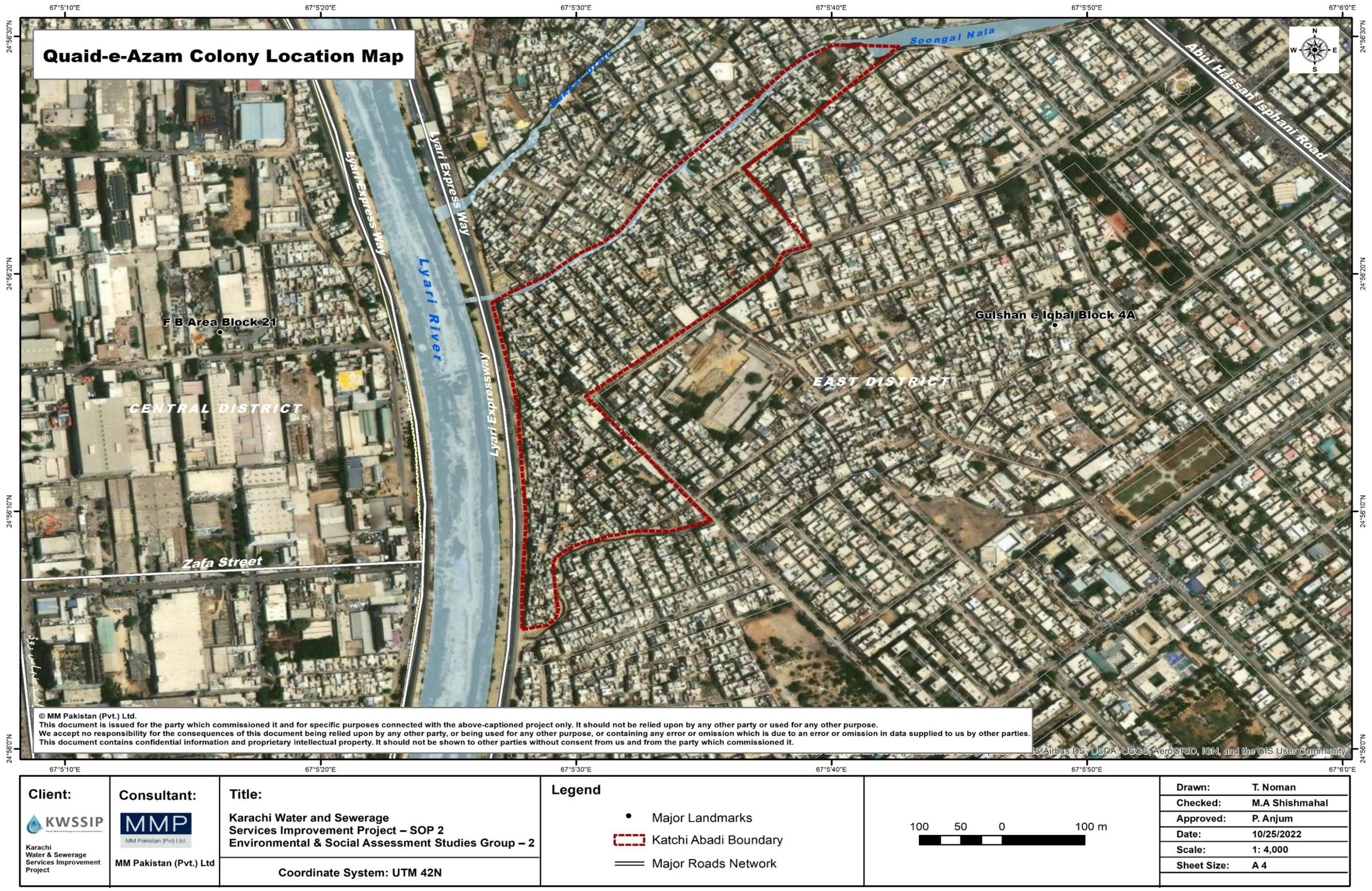


Figure A1-1: Quaid-e-Azam Colony Location Map

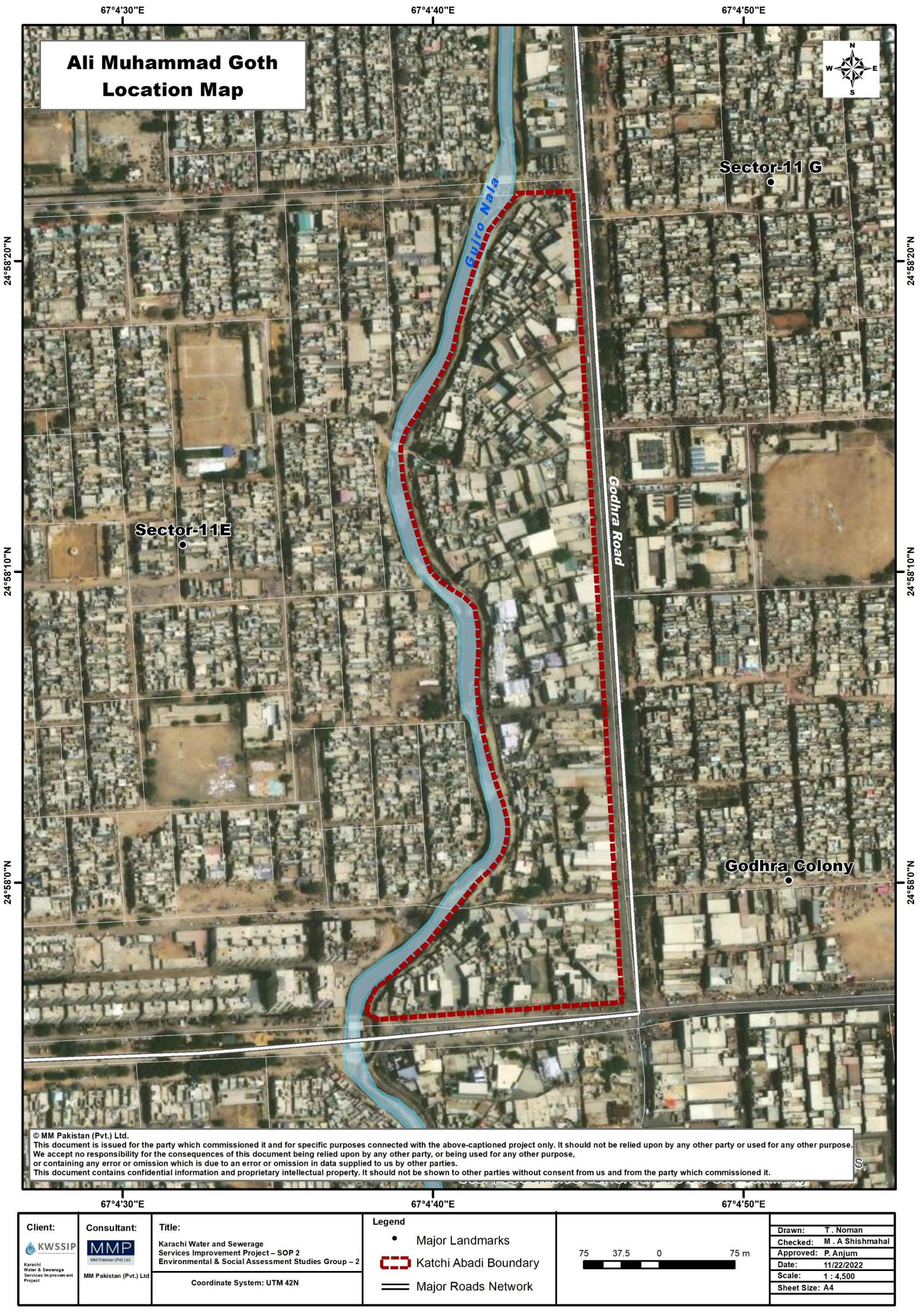


Figure A1-1: Ali Mohammad Goth Location Map

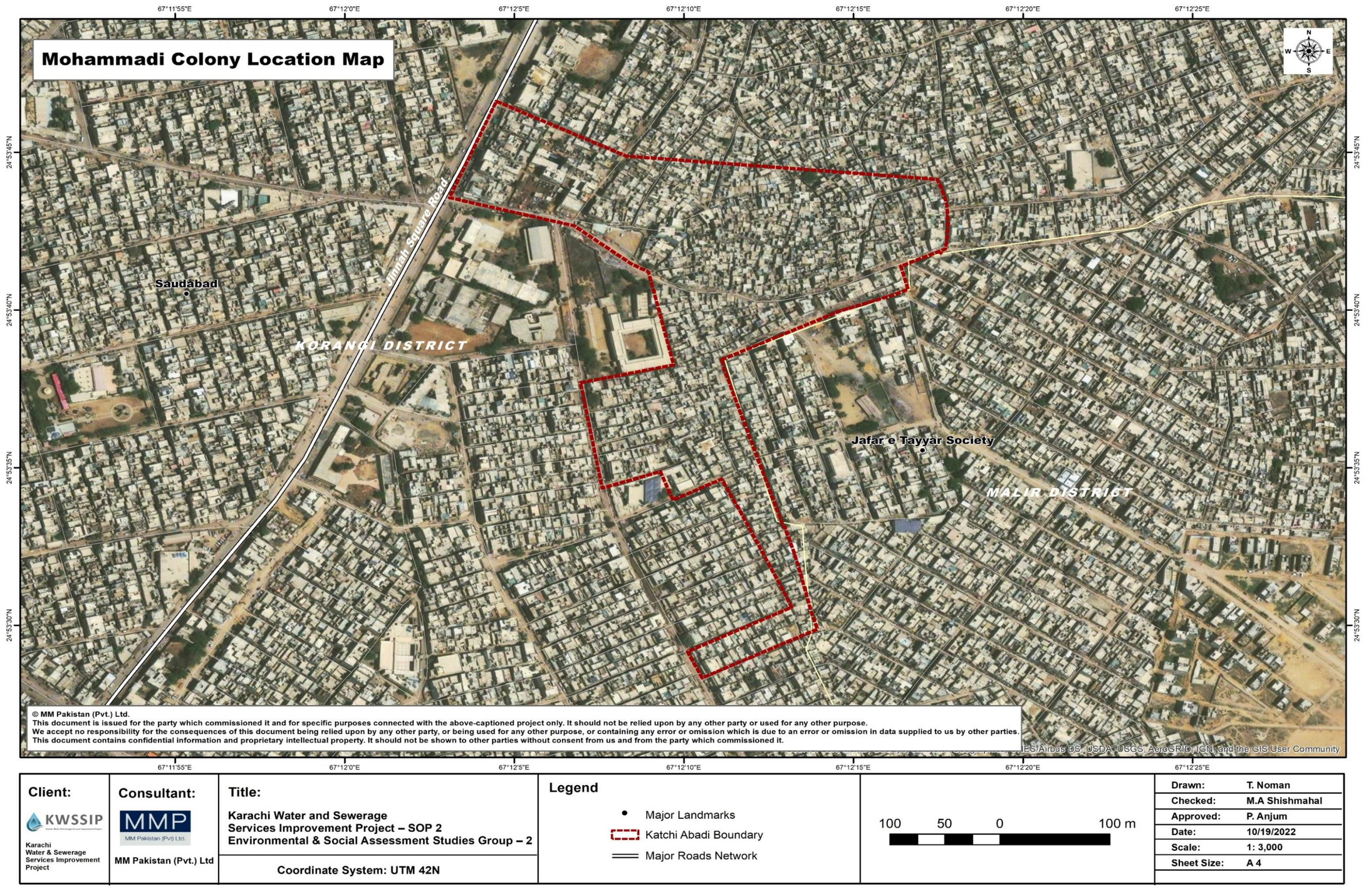


Figure A1-1: Muhammadi Colony Location Map

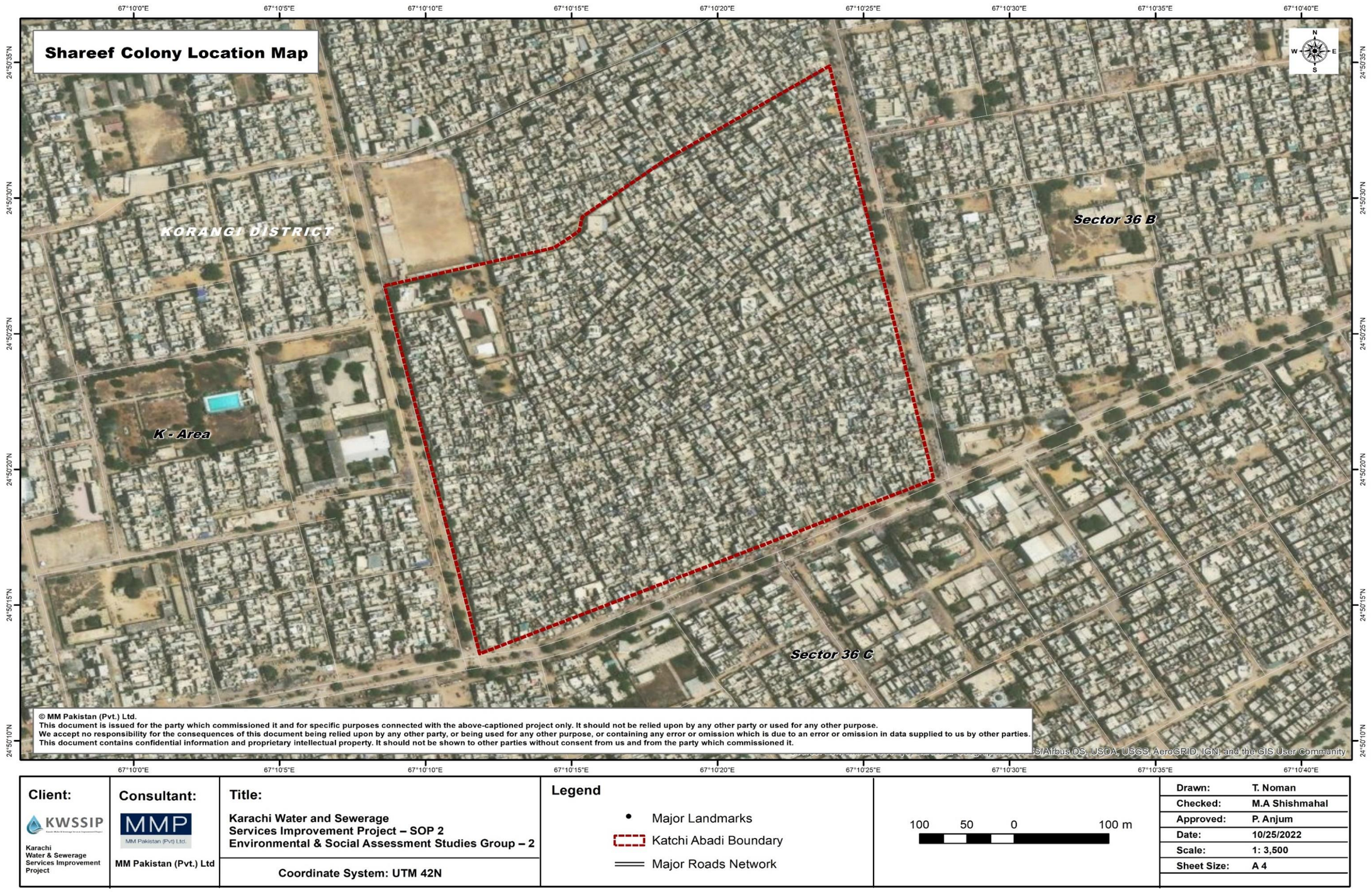


Figure A1-1: Sharif Colony Location Map

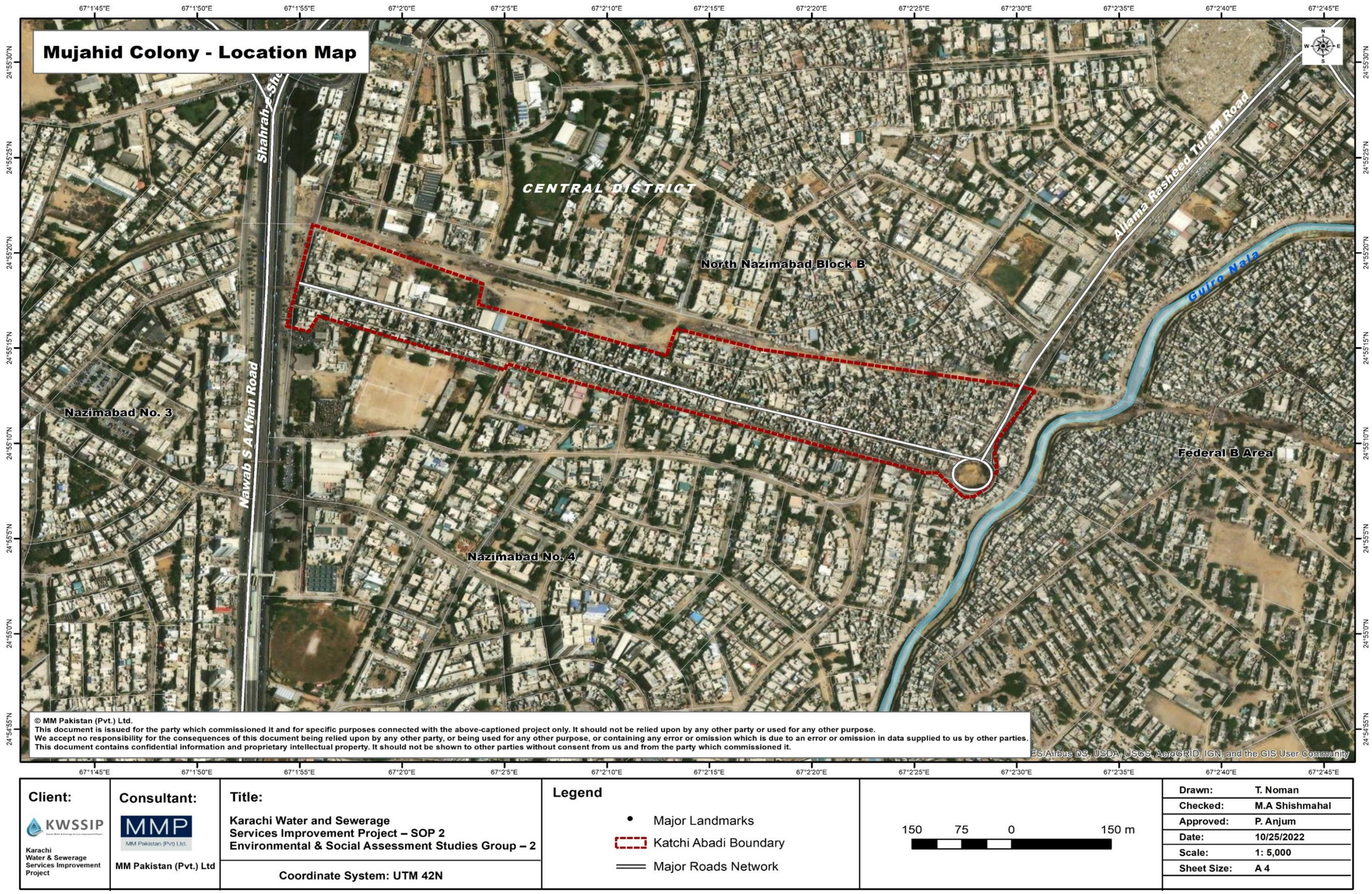


Figure A1-1: Mujahid Colony Location Map

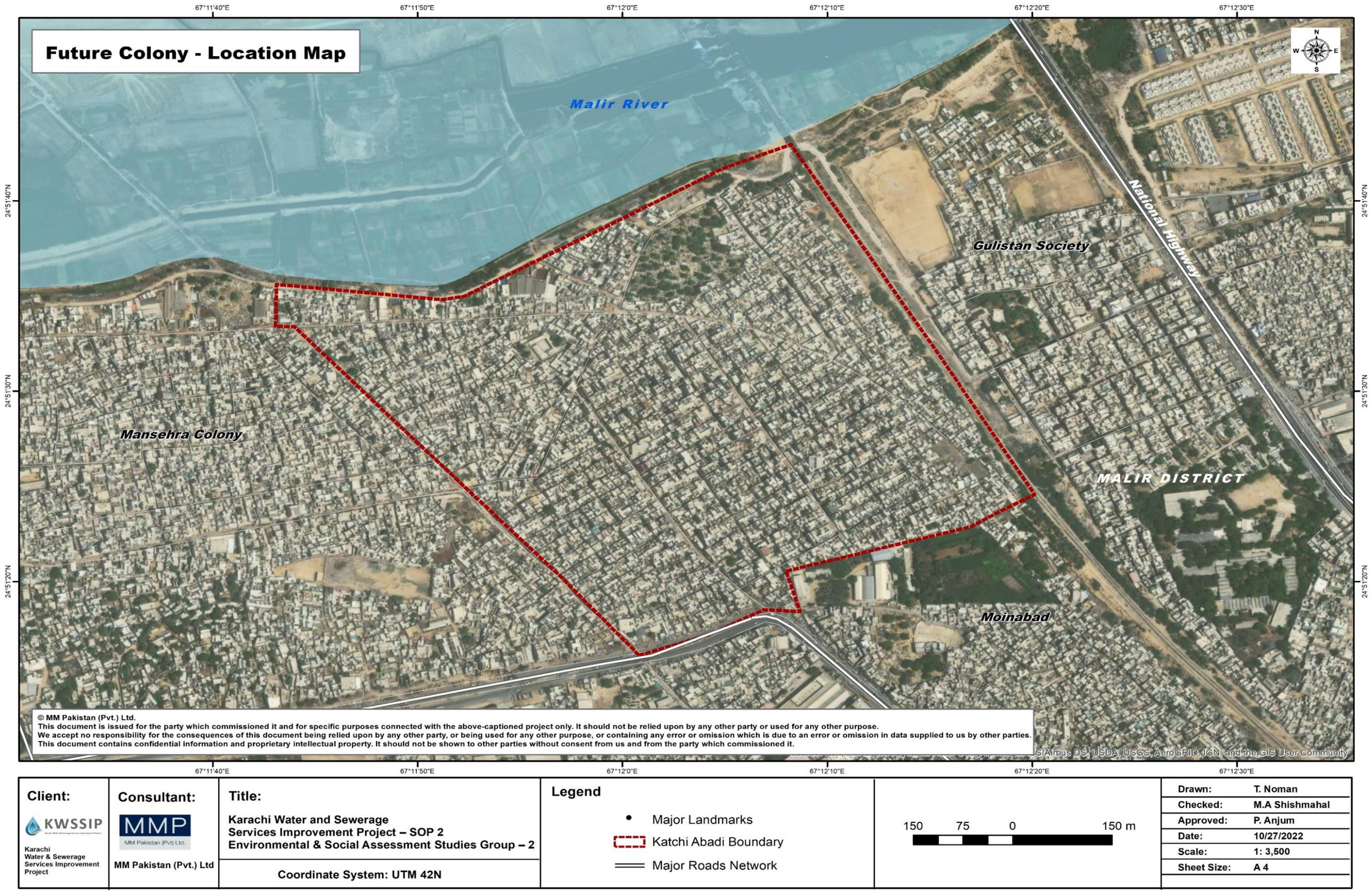


Figure A1-1: Future Colony Location Map

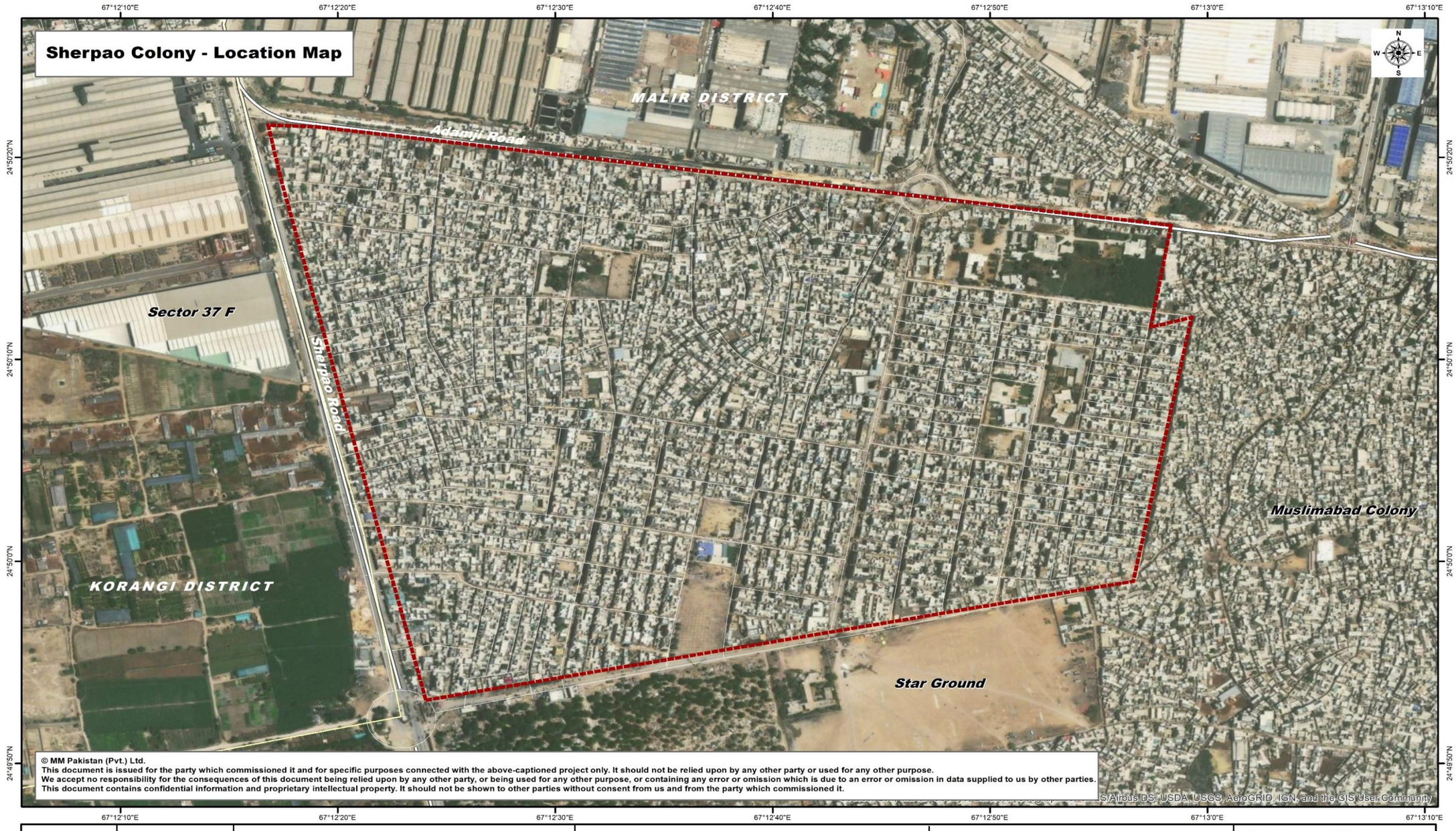


Figure A1-1: Sherpao Colony Location Map

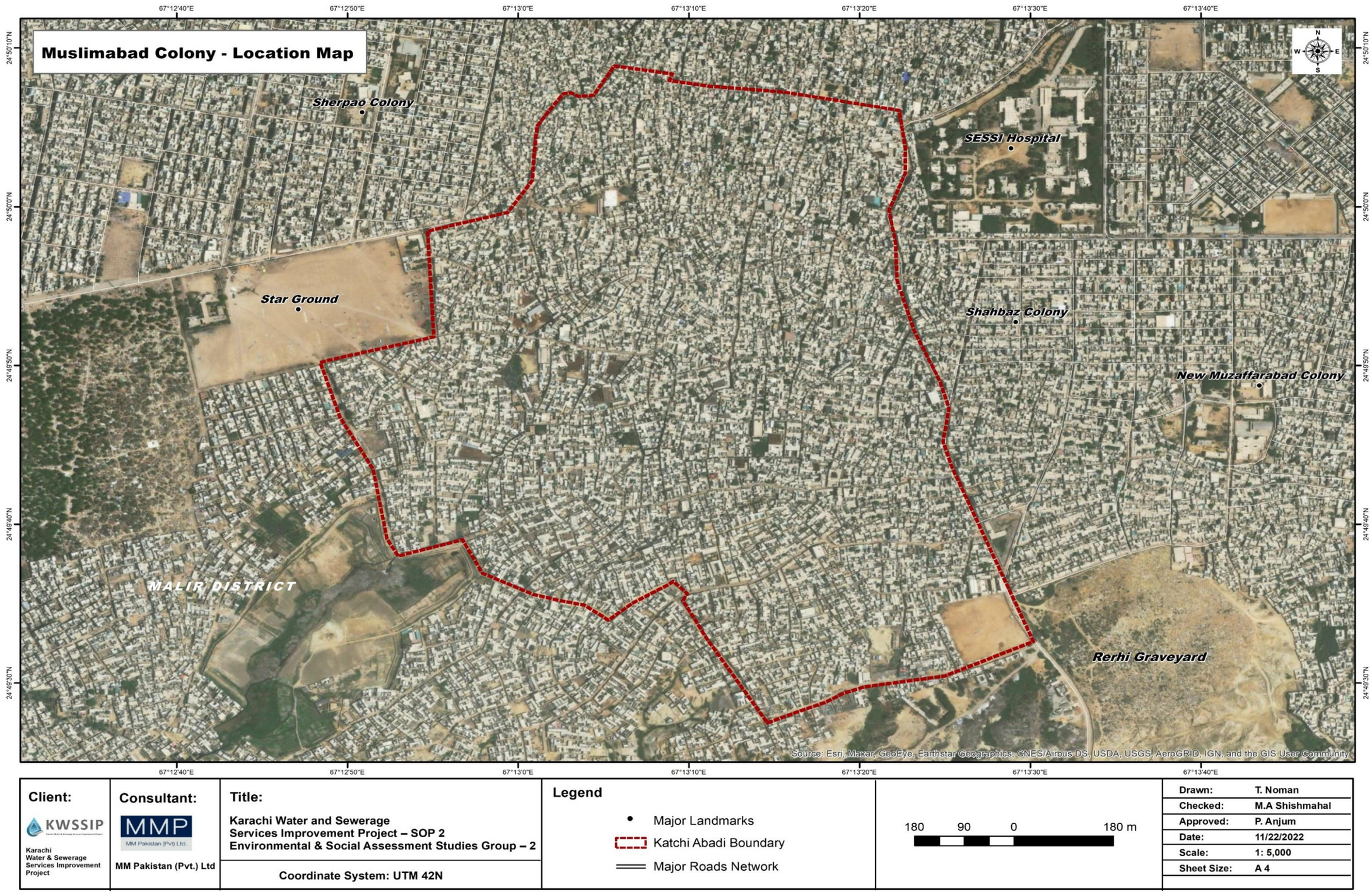


Figure A1-1: Muslimabad Colony Location Map

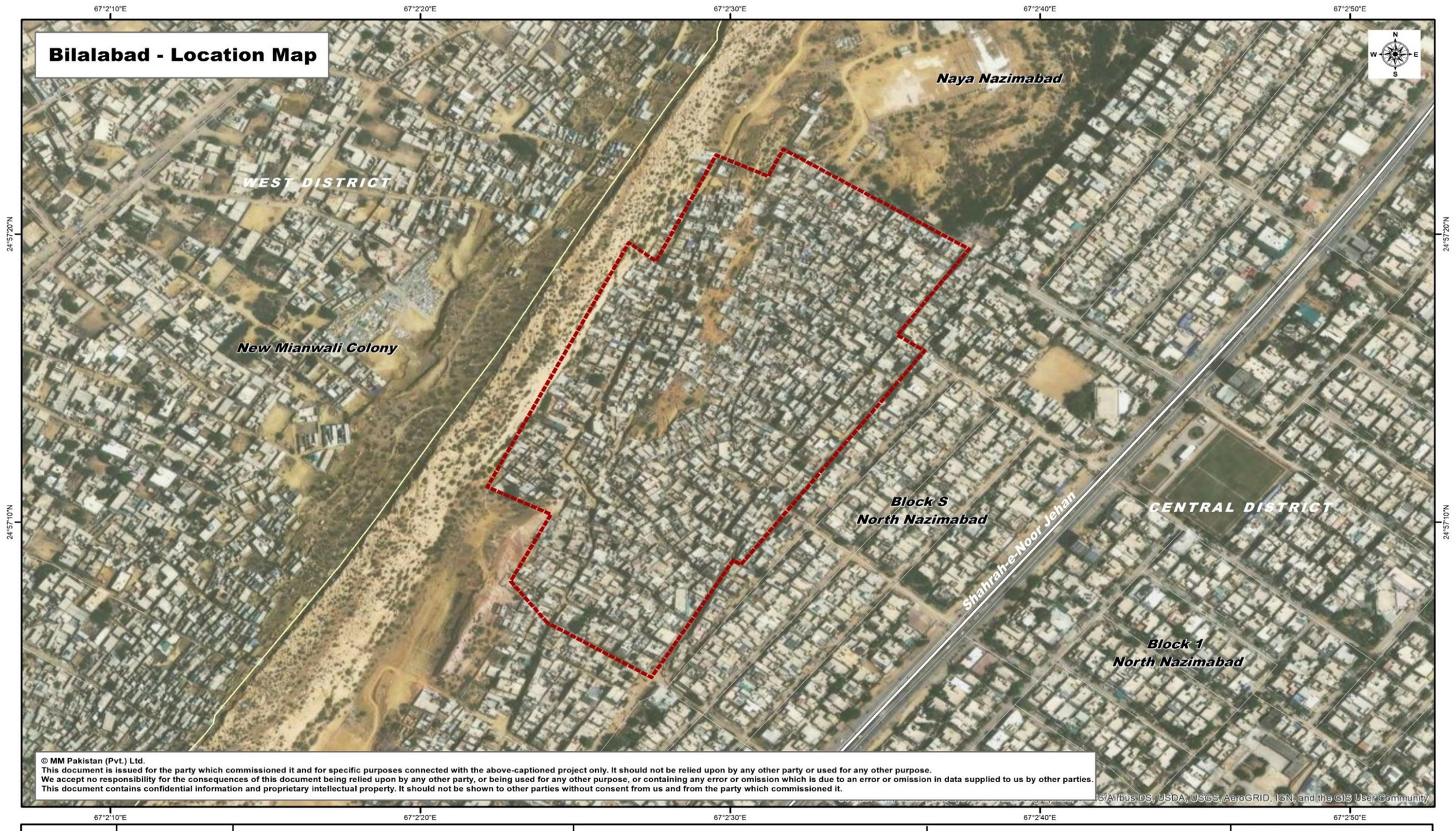


Figure A1-1: Bilalabad Colony Location Map

ESIA Approach and Methodology

Study Approach

The study has been conducted in accordance with World Bank ESF (ESS1, ESS2, ESS3, ESS4, ESS5, ESS6 & ESS10), and Sindh Environmental Protection Agency (SEPA) guidelines. The study is based on both primary and secondary data and information.

Review of Project's Design Documents and Desk Research for Secondary Data Analysis

The design documents and feasibility reports have been reviewed to understand the extent of construction works and their potential outcomes on the existing environment and social conditions. The applicable provincial policies, guidelines, legislations and World Bank guidelines were also studied. Secondary data sources have been used to study the environmental and social aspects including climate, rainfall, temperatures, geology, soils; flora and fauna profiles, critical habitats / vegetation, any sites / structures / natural features having archaeological / historical / architectural / religious or cultural significance; and Socio-economic environment including livelihood conditions in the project area.

Reconnaissance Surveys, Delineation of the Area of Influence (AoI) and Environmental & Social Screening

Reconnaissance surveys were carried out to assess the existing environmental and social conditions in the project area that may potentially be affected by the proposed project. AoI has been established based upon the assessment on possible reach of impacts and past similar field experience. Screening has been performed to determine the significance of impacts, the type of assessment to be carried out and the appropriate ESA instrument required to be prepared for the project.

Review of Legislation and Guidelines

National legislation, international agreements, environmental guidelines both of SEPA and WB, and best industry practices have been reviewed to set environmental standards that PIU KWSSIP as the executing agency will adhere to during implementation of the project.

Primary Data Collection (Baseline Surveys)

Comprehensive field data gathering exercises were carried out for environmental and social baseline data collection in the AoI, between December 2021 and April 2022. The environment survey focused on collecting site-specific baseline information of the project area related to water quality, air quality, noise, traffic situation, land-use, sensitive receptors that could get affected by dust or noise and presence of any historical / cultural / archaeological sites etc. The ecology survey focused on collecting baseline information on floral and faunal species. Socio-economic baseline information has been obtained mainly through focus group discussions with male and female groups of the communities in the AoI. Social surveys were focused on the specific aspects of socio-economic profile of the project area related to households, education, health situation, diseases, income, gender related problems, businesses, presence of social organizations etc.

Stakeholder Consultations

Stakeholder consultations were carried out with all key stakeholders, particularly local communities residing in the project's AoI, local businesses and government / local government bodies in line with the KWSSIP-2 SEP. Scoping sessions were undertaken with the local communities / residents, representatives from SEPA, Health / Education Departments, NGOs active in the area, Public Health Engineering Department etc. The stakeholder consultation process involved information disclosure regarding the project development with stakeholders to brief them about the project and to seek their response/recommendation. A stakeholder engagement workshop has also been organized to disseminate the project information and get feedback from the key institutional stakeholders.

Impacts Identification and Assessment

Potential impacts arising from each phase of the proposed project have been identified and assessed based on field data, secondary data, expert opinions and examining previous similar projects in Pakistan. These include effects on the physical, biological, and socio-economic environment.

Recommendations for Mitigation Measures

Mitigation measures to minimize, eliminate or compensate for the potential environmental and social impacts have been recommended. The mitigation measures have been recommended based on past experiences, best industry practices, legislative requirements, and professional judgment.

Preparation of Environmental and Social Impact Assessment (ESIA)

An Environmental and Social Impact Assessment (ESIA) has been prepared for effective implementation of the recommended mitigation measures. The ESIA includes controls to minimize the identified impacts and a monitoring program to monitor effects of mitigation measures implemented and residual impacts, if any, during implementation. The ESIA has identified roles and responsibilities of all concerned parties during the implementation of the project.

Methodology for the ESIA comprises a series of integrated tasks including fieldwork (e.g., surveys, consultations etc.) and desk reviews as deemed necessary to meet the needs of the ESIA.

Annexure - 2: Legal and Institutional Requirements

General

This Chapter summarizes the national, provincial, the World Bank and international environmental and social legislation, regulations, standards, and treaties relevant to this ESIA. The footprint of the Project is located in the administrative boundaries of Sindh province of Pakistan, therefore the rules, regulations and standards applicable in Sindh are applicable to this project. World Bank's ESF and the ESS relevant to this project are duly described in this section. World Bank's EHS Guidelines will also be followed to make the project implementation in compliance with these guidelines.

Review of the National and Provincial Environmental Requirements

The applicable Environmental and Social (E&S) legislations and regulations are briefly described in **Table A2-1**.

Table A2-1: Applicable National and Provincial Acts

National/Provincial Acts (Year of implementation)	Relevance / Applicability
Sindh Environment Protection Act, 2014	Sindh Environmental Protection Act 2014 is relevant to the proposed project to protect the environment in the provincial boundaries of Sindh, requiring an Initial Environmental Examination (IEE) to be prepared and submitted for this project for approval. As per World Bank ESF terms, ESIA is the instrument closest to an IEE.
Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021	Sindh EPA has notified Environmental Assessment Regulations, 2021, which are applicable to the proposed intervention for Review of IEE and General Environment Approval, as project falls under Schedule-II.
Sindh Environmental Quality Standards 2016	Standards set out in SEQS and relevant to the Project include: ◆ Municipal and liquid industrial effluents (32 parameters) ◆ Industrial gaseous emissions (16 parameters) ◆ Motor vehicle exhaust and noise (used and new vehicles) ◆ Ambient air quality (9 parameters) ◆ Drinking water quality (32 parameters) ◆ Noise (four zones during day and night). These standards are applicable for both construction and operational phases of the project.
Antiquity Act (1975) and the Sindh Cultural Heritage (Preservation) Act, 1994	The Antiquities Act of 1975 and the Sindh Cultural Heritage (Preservation) Act, 1994 ensures the protection of cultural resources / assets in Sindh. The act is applicable to the project and the Office of the Director General – Antiquities & Archaeology – GoS will be informed in case of any resource found. As for now, there are no known antiquities in the project area; however, in case of chance find this act will become relevant.
Factories Act, 1934 and The Sindh Factories (Second Amendment) Act, 2021	This is an act to consolidate and amend laws on labour rights and for matters connected to their safety, basic welfare facilities including living, food, occupational health including infectious diseases and protection from those infectious diseases; it also covers the work-related hazards and protection from those hazards, shelters facilities during rest time, restriction of working hours and holidays rules etc. The Sindh amended law is for the

National/Provincial Acts (Year of implementation)	Relevance / Applicability
	rights of labour working in the province of Sindh and will be applicable to the proposed works.
The Sindh Occupational Safety and Health Act, 2017	This is a consolidated law for the OHS of the persons at workplace and to protect them against risks arising out of the occupational hazards; promote safe and healthy working environment catering to the physiological and psychological needs of the employees at workplace and is relevant to the project
The Sindh Bonded Labour System (Abolition) Act, 2015	The Bonded Labour System (Abolition) Act defines the `Bonded Labour System' as a system of forced, or partly forced, labour under which a debtor enters, or is presumed to have entered into an agreement with the creditor. Adherence to the act will be mandatory.
Sindh Minimum Wages Act, 2015 (Sindh Act No. VIII of 2016)	The Act provides for the regulation of minimum rates of wages and various allowances for different categories of workers employed in industrial and commercial undertakings and establishments in Sindh province. Implementation of the act at the project will be mandatory.
Sindh Workers Compensation Act, 2015	This act is expedient to provide for the payment by certain classes of employers to their workers or their legal heirs of compensation for injury or death by accident. Implementation of the act at the project will be mandatory.
Fatal Accidents Act 1855	This is an Act to provide compensation to families for loss occasioned by the death of a person caused by actionable wrong. For community related accidents, this law will be applicable.
The Sindh Prohibition of Employment of Children Act, 2017	An Act to prohibit the employment of children and to regulate employment of adolescents in certain occupations and processes to be taken place in provincial boundaries. The Act prohibit and regulate employment of children less than 14 years and is applicable to the project and the Contractors and sub-contractors will have to comply with this Act.
The Protection Against Harassment of Women at the Workplace Act, 2010	The Protection Against Harassment of Women at the Workplace Act, 2010 is a legislative act in Pakistan that seeks to protect women from sexual harassment at their place of work, and equally applicable to this project.
Land Acquisition Act 1894 and The Land Acquisition (Sindh Amendment) Ordinance, 1992	◆ Empowers the provincial government to acquire private land for projects in the national interest. Under these acts, only legal owners of the land are eligible for compensation / livelihood support. ◆ The project will cause disturbance to the assets of 34 Project Affected Persons (PAPs) in terms of demolition of ramps and stair steps outside their houses, coming under the trenching area. ◆ This act is however not applicable as the PAPs utilizing this land for ramps / stairs does not possess any legal documentation of land ownership. They will however be compensated as per ESS 5 guidelines and an Abbreviated Resettlement Plan (ARP) has been prepared for this purpose.
The Sindh Local Government (Amendment) Act, 2021	The LGA empowers the provincial governments to enforce laws for: ◆ Land use ◆ Conservation of natural vegetation ◆ Air, water, and land pollution

National/Provincial Acts (Year of implementation)	Relevance / Applicability
	◆ Disposal of solid waste and wastewater effluents ◆ Public health and safety, including some provisions for environmental protection. Under the act, the local councils are authorized to restrict activities causing pollution. The Project will be required to follow the provisions of the Sindh Local Government Act to ensure; prevention of air, water and land pollution, safe disposal of waste and implementation of safe work practices
Hazardous Substances Rules, 2014	The rule describes the procedure of handling, transportation and disposal of hazardous substances and hazardous waste. General safety precautions for handling hazardous substances as well as safety precautions for workers, and notification requirements in the event of an accident are also described in these rules. These Rules are applicable to the proposed project as old asbestos cement (AC) pipes could be found during excavation in the Katchi Abadis. Similarly, the project construction will also involve handling and disposal of construction and domestic waste. Accordingly, the guidelines for a Waste Management Plan have been developed aligned with these rules.
Building Code of Pakistan, 2007	The project will require construction of overhead tanks in the Katchi Abadis, therefor provision of Building Code of Pakistan will apply for engineering design and related components. The construction in violation of the Building Code will be deemed as violation of professional engineering work. Moreover, a certificate for the proposed action will be obtained from Provincial Building Control Authority.

Comparison and Applicability of SEQS vs WHO / WBG Standards on Drinking Water Quality

A comparison of local and international water quality standards is provided in **Table A2-2**. The more stringent of the two will be followed during the construction stage (drinking water quality for workers) and during operational stage for dispensing water from the disinfection system in each Katchi Abadi. The stringent of the two are highlighted with green, while the similar values are highlighted with yellow, and these highlighted values are applicable at the project.

Table A2-2: Comparison of Local and International Drinking Water Quality Standards

Parameter	Unit	SEPA	WHO / WBG
Bacterial			
E-Coli	numbers/ml	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample
Total Coliform	numbers/ml	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample
Physical			
Color	TCU	≤ 15 TCU	≤ 15 TCU
Taste	No objectionable/Acceptable	None	None
Odor	No objectionable/Acceptable	None	None
Turbidity	NTU	< 5 NTU	< 5 NTU
Total Hardness	mg/l	< 500 mg/l	-
TDS	mg/l	< 1000	< 1000
pH		6.5-8.5	-

Parameter	Unit	SEPA	WHO / WBG
Chemical			
Aluminum	mg/l	≤0.2	0.2
Antimony	mg/l	≤0.005	0.02
Arsenic	mg/l	≤0.05	0.01
Barium	mg/l	0.7	0.7
Boron	mg/l	0.3	0.3
Cadmium	mg/l	0.01	0.003
Chloride	mg/l	<250	250
Chromium	mg/l	≤0.05	0.05
Copper	mg/l	2	2
Cyanide	mg/l	≤0.05	0.07
Fluoride	mg/l	<1.5	1.5
Lead	mg/l	≤0.05	0.01
Manganese	mg/l	≤0.5	0.5
Mercury	mg/l	≤0.001	0.001
Nickel	mg/l	≤0.02	0.02
Nitrate	mg/l	≤0.50	50
Nitrite	mg/l	≤3	3
Selenium	mg/l	0.01	0.01
Residual Chlorine	mg/l	0.2-0.5 at consumer end	-
Zinc	mg/l	5.0	3

Comparison and Applicability of SEQS vs WHO / WBG Standards on Air Quality

A comparison of local and international air quality standards is provided in **Table A2-3**. The more stringent of the two will be followed during the project construction phase. The stringent of the two are highlighted with green, which are applicable at the project.

Table A2-3: Comparison of Local and International Air Quality Standards

Pollutants	SEPA		WHO / WBG	
	Avg. Time	Standard	Avg. Time	Standard
SO_2	24 hrs	120 ug/m^3	24 hr 10 min	40 ug/m^3 500 ug/m^3
CO	8 hrs 1 hr	5 mg/m^3 1 0 mg/m^3	8 hrs	4 ug/m^3
NO_2	24 hrs	80 ug/m^3	24 hr	25 ug/m^3
O_3	1 hr	130 ug/m^3	-	-
SPM	24 hrs	500 ug/m^3	-	-
PM_{10}	24 hrs	150 ug/m^3	24 hr	45 ug/m^3
$PM_{2.5}$	24 hrs	75 ug/m^3	24 hr	15 ug/m^3

Comparison and Applicability of SEQS vs WHO / WBG Standards on Noise

A comparison of local and international noise standards is provided in **Table A2-4**. The more stringent of the two will be followed during the project construction. The stringent of the two are highlighted with green, while the similar values are highlighted with yellow, and these highlighted values are applicable at the project.

Table A2-4: Comparison of Local and International Noise Standards

Category of Area/Zone	Limit in dB (A) Leq			
	SEPA		WHO/WBG	
	Day Time	Night Time	Day Time	Nighttime
Residential area (A)	55	45	55	45
Commercial area (B)	65	55	70	70
Industrial area (C)	75	65	70	70
Silence zone (D)	50	45	55	45

International Treaties and Conventions

Pakistan is a signatory to a number of international environment and social related treaties, conventions, declarations and protocols.

International Labour Organization (ILO) Fundamental Conventions – Ratified by Pakistan

The ILO's fundamental convention applicable.

- Forced Labour Convention, 1930 (Convention No. 29)
- Freedom of Association and Protection of the Right to Organize Convention, 1948 (Convention No. 87)
- Right to Organize and Collective Bargaining Convention, 1949 (Convention No. 98)
- Equal Remuneration Convention, 1951 (Convention No. 100)
- Abolition of Forced Labour Convention, 1957 (Convention No. 105)
- Discrimination (Employment and Occupation) Convention, 1958 (Convention No. 111)
- Minimum Age Convention, 1973 (Convention No. 138) Minimum age specified: 14 years
- Worst Forms of Child Labour Convention, 1999 (Convention No. 182)

World Bank Environmental, Health and Safety Guidelines

World Bank Group's Environmental, Health, and Safety (EHS) Guidelines are applicable to the proposed project. In particular, the applicable guidelines for construction and operational phases of the project includes; the General EHS Guidelines (2007), the EHS Guidelines for Waste Management Facilities (2007) and the EHS Guidelines for Water and Sanitation (2007).

World Bank Environmental and Social Framework

The World Bank ESF sets out the World Bank's commitment to sustainable development, through a Bank Policy and a set of ESS that are designed to for environmental and social sustainability. There are 10 Environmental and Social Standards and their applicability on project is given in **Table A2-5**.

Table A2-5: World Bank Environmental and Social Standards Applicable to the Project

	Environmental and Social Standards	Description	Relevance with Project and Actions (to be) Taken
ESS 1	Assessment and Management of Environmental and Social Risks and Impacts	Identify, assess, evaluate, and manage environment and social risks and impacts in a manner consistent with the ESF. Adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities	◆ This study has been conducted in compliance with ESS 1 and based upon the impact and risk assessment ESMP has been prepared. ◆ Project components were thoroughly screened to ensure that they are covered by and meet the requirements of ESS and Government laws and regulation ◆ E&S risks and Impacts have been identified based on surveys and consultations with primary stakeholders including communities and implementing agency ◆ The ESMP will be disclosed both at the KWSSIP and at Bank's websites. ◆ PIU - KWSSIP will implement an Environment and Social Commitment Plan (ESCP) and comply with its conditions during the project implementation. ◆ Monitoring and reporting on E&S performance will be carried out during implementation.
ESS 2	Labour and Working Conditions	Promote safety and health at work. Promote the fair treatment, non-discrimination, and equal opportunity of project workers. Protect project workers, with particular emphasis on vulnerable workers. Prevent the use of all forms of forced labour and child labour. Support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law. Provide project workers with accessible means to raise workplace concerns.	◆ Project will recruit the following types of workers: ◆ Direct workers will include the project managers and supervisors, who are employees of KWSSIP / KWSC; ◆ All workforces deployed by the Contractors and the Project Supervision Consultant under the KWSSIP / KWSC will be deemed to be contracted workers. The Contractor might further engage multiple subcontractors; ◆ Influx of migrant labour from other districts for construction works will be minimized by employing local workers. ◆ Labour Management Procedures (LMP) for KWSSIP-2 have been prepared to regulate working conditions and management of workers relation including worker specific Grievance Redress Mechanism (GRM), terms and conditions of employment, non-discrimination and equal opportunity, Sexual Exploitation and Abuse / Sexual Harassments (SEA/SH), protection of workforce,

	Environmental and Social Standards	Description	Relevance with Project and Actions (to be) Taken
			the prohibition of child / forced labor (including in source country and supply chain) and provision of OHS management
ESS 3	Resource Efficiency and Pollution Prevention and Management	Promote the sustainable use of resources, including energy, water, and raw materials. Avoid or minimize adverse impacts on human health and the environment caused by pollution from project activities. Avoid or minimize project-related emissions of short and long-lived climate pollutants. Avoid or minimize generation of hazardous and non-hazardous waste. Minimize and manage the risks and impacts associated with pesticide use. Requires technically and financially feasible measures to improve efficient consumption of energy, water, and raw materials, and introduces specific requirements for water efficiency where a project has high water demand.	◆ The project during construction will explore use of local materials and recycled construction materials to the maximum extent possible. ◆ Pollution prevention and management measures have been included in the ESMP to offset risks and impacts of pollution from potential sources such as dust and emissions from operation of construction equipment, material haulage vehicles; effluents from labour / construction camp; spillage or leakage during handling of hazardous materials like fuel, battery wastes etc.; and disposal of wastes generated during project implementation period.
ESS 4	Community Health and Safety	Anticipate or avoid adverse impacts on the health and safety of project-affected communities during project life-cycle from routine and non-routine circumstances. Promote quality, safety, and climate change considerations in infrastructure design and construction. Avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials. Have in place effective measures to address emergency events. Ensure that safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities.	◆ The project construction phase will involve (i) excavation work, construction debris handling and disposal etc. during construction; (ii) increased dust and noise due to trenching works in narrow streets and (iii) restricted access etc. ◆ The impacts will be mitigated through suitable measures as incorporated in the ESMP and they will also be made an integral part of the Contractor's obligation as part of the Contractor's Site Specific Environmental and Social Management Plan (SSEMP), Occupational & Community Health & Safety Plans (OHS / CHS Plans) and other project specific plans. ◆ The Contractor during construction phase will use security arrangements and personnel to safeguard the campsites. For this, the Contractor will be guided by the principal of proportionality and GIIP and the relevant laws related to hiring, rules of conduct, training and equipping such security workers. ◆ The use of force in providing security will not be permitted except when it used for defensive purposes and is in proportion to the nature of the threat.

	Environmental and Social Standards	Description	Relevance with Project and Actions (to be) Taken
			◆ Security Management Guidelines for Contractors and KWSC are included.
ESS 5	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	ESS 5 requires; avoidance of involuntary resettlement, in case it's unavoidable, minimization of involuntary resettlement, avoidance of forced eviction, mitigating unavoidable adverse social and economic impacts from land acquisition or restrictions on land use by: (a) providing timely compensation for loss of assets at replacement cost and (b) assisting displaced persons in improving, or at least restoring, their livelihoods and living standards, improving living conditions of poor or vulnerable persons who are likely to be physically displaced and ensuring that resettlement activities are planned and implemented with appropriate disclosure of information, meaningful consultation, and the informed participation of those affected.	◆ The project will cause disturbance to the assets of 34 Project Affected Persons (PAPs) in terms of demolition of ramps and stair steps outside their houses, coming under the trenching area. ◆ An Abbreviated Resettlement Plan (ARP) has been prepared to address these asset losses.
ESS 6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	Protect and conserve biodiversity and habitats. Apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity. To promote the sustainable management of living natural resources.	◆ The project activities will not involve clearance of vegetation or trees. The project sites are highly urbanized and no wildlife has been found in the Area of Influence.
ESS 10	Stakeholder Engagement and Information Disclosure	Establish a systematic approach to stakeholder engagement that helps proponent (KWSSIP) identify stakeholders and maintain a constructive relationship with them. Assess stakeholder interest and support for the project and enable stakeholders' views to be taken into account in project design. Promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life cycle. Ensure that appropriate project information is disclosed to stakeholders in a timely,	◆ Consultations with a wide range of stakeholders have been carried out while conducting this study. ◆ Focus on promoting gender equality and social inclusion, particularly for women and vulnerable persons is one important aspect of the KWSSIP. The project recognizes that women and vulnerable groups, such as those living in informal settlements, may face unique challenges in accessing and benefiting from water and sanitation services. ◆ Gender assessments have been carried out to identify the specific needs and challenges faced by women in accessing water and sanitation services. The project will ensure that the

	Environmental and Social Standards	Description	Relevance with Project and Actions (to be) Taken
		understandable, accessible and appropriate manner.	needs of women and other vulnerable groups are taken into account. ◆ SEP has been prepared for the entire KWSSIP-2 (including Improved Water Supply and Sewerage in additional Low-Income Communities Project) to comply with the ESS-10 requirements and it will be followed during the implementation of the project for the effective engagement of stakeholders.

Annexure - 3: Project Description

Selection of Ten Additional Low-Income Communities (Katchi Abadis)

Ten low-income settlements have been selected out of the list of Katchi Abadis provided by the PIU for the proposed project works. Six settlements (Zia Colony, Quid-e-Azam Colony, Ali Mohammad Goth, Mohammadi Colony, Sharif Colony, Mujahid Colony) have been selected based upon a Multi Ranking Selection Criteria which involved screening of multiple factors including Technical Aspects (proximity to nearby water / sewer mains), Health / Need Aspects, Environmental / Socio-economic Aspects and Financial limits available for the development, whereas the remaining four settlements (Future Colony, Sherpao Colony, Bilalabad Colony and Muslimabad Colony were chosen at PIU's prerogative based upon the presence of higher number of polio cases (in the light of polio eradication program data on emergence of Super-High Risk Union Councils 'SHRUCs'). The selected low-income settlements are enumerated in **Table A3-1**.

Table A3-1: List of Selected Low-Income Communities (Katchi Abadis)

No.	Selected Low-Income Communities (Katchi Abadis)	District	Town
1.	Zia Colony	Korangi	Korangi
2.	Quid-e-Azam Colony	East	Gulshan e Iqbal
3.	Ali Mohammad Goth	Central	North Karachi
4.	Mohammadi Colony	Korangi	Malir
5.	Mujahid Colony	Central	Liaqatabad
6.	Future Colony	Malir	Landhi
7.	Sherpao Colony	Malir	Landhi
8.	Sharif Colony	Korangi	Landhi
9.	Muslimabad Colony	Malir	Landhi
10	Bilalabad Colony	Central	North Nazimabad

Geographical location map of the selected Katchi Abadis is shown as **Figure A3-1**.

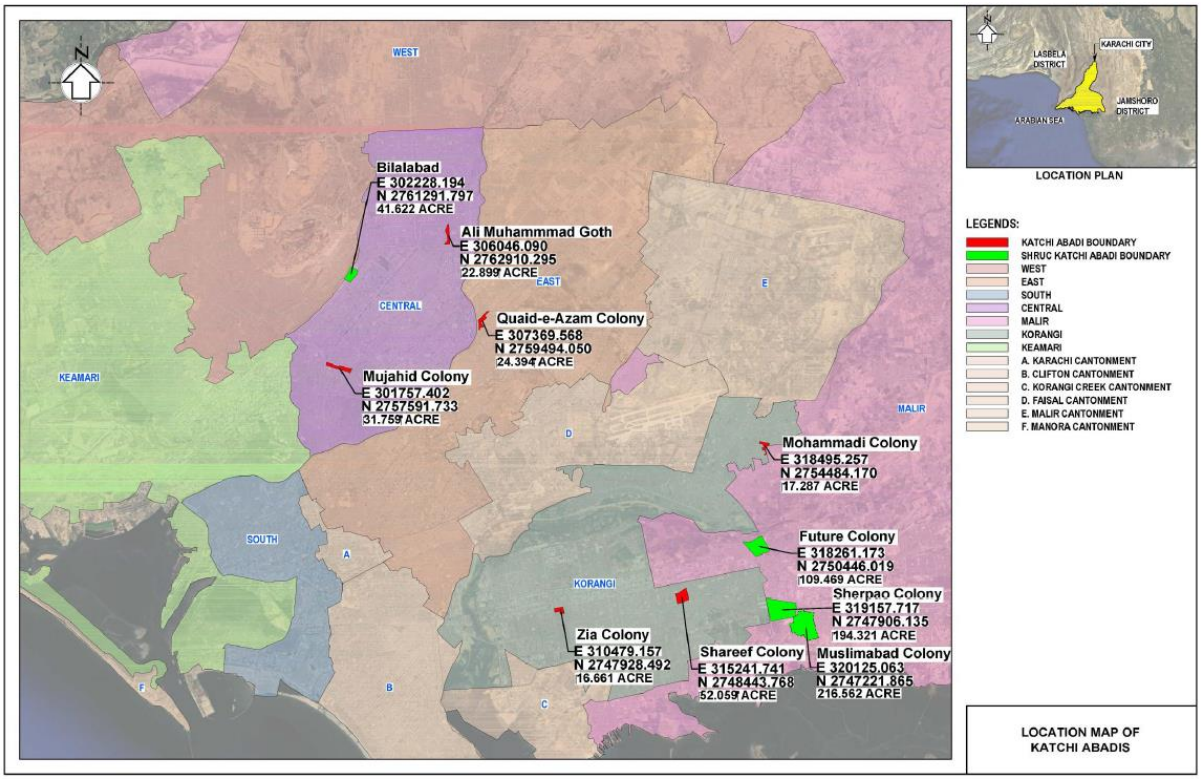


Figure A3-1: Location Map of Ten Selected Katchi Abadis

Population Projection for Water and Sewerage System Design Life

The design life of the project has been kept as till year 2053. Population estimation for the projects design life has been performed by the Technical Consultant for all the selected settlements using following modes of population data:

- Data Provided by Sindh Katchi Abadi Authority (SKAA);
- SKAA Leased Maps for Katchi Abadis, and;
- Population Projection using different studies on Population such as Census Data of Pakistan Bureau of Statistics (PBS) 2017, Karachi Strategic Development Plan (KSDP- 2020) and JICA Water Master Plan Study.

Table A3-2 provides an overview of population comparison as well as the population figures being considered for design:

Table A3-2: Overview of Population Comparison and Selected Population Figures

No.	Name of Katchi Abadi	Area as per SKAA Leased Maps (Acre)	Population as per SKAA	Population as per SKAA Plot Counts	Area as per PBS/ JICA Estimation (Acre)	Adjusted Population as per PBS/ JICA	Population Selected
1	Zia Colony	16.69	1,400	15,078	-	12,118	15,078
2	Quaid-e- Azam Colony	24.38	6,800	12,712	-	21,590	21,590
3	Ali Muhammad Goth	22.89	15,000	9,072	-	17,953	17,953
4	Mohammadi Colony	17.29	3150	16,912	-	16,367	16,912

No.	Name of Katchi Abadi	Area as per SKAA Leased Maps (Acre)	Population as per SKAA	Population as per SKAA Plot Counts	Area as per PBS/ JICA Estimation (Acre)	Adjusted Population as per PBS/ JICA	Population Selected
5	Mujahid Colony	28.85	1,750	25,592	-	8,941	25,592
6	Future Colony	-	-	-	111.17	106,574	106,574
7	Sherpao Colony	-	-	-	194.37	336,218	336,218
8	Sharif Colony	89.17	13,860	21,826	-	111,096	111,096
9	Muslimabad Colony	-	-	-	216.6	240,389	240,389
10	Bilalabad Colony	-	-	-	41.79	21,697	21,697

Proposed Water and Sanitation Interventions

The details of water and sewerage network and associated components are provided in **Table A3-3**.

Table A3-3: Details of Water and Sewerage Network and Associated Components

No.	Katchi Abadi Name	Length of Water Supply and Sewage Conveyance System (m)	Volume of Excavated Material (m^3)	Nearest Main Water Line for Inlet	Nearest Main Sewer Line for Disposal	Capacity of Under Ground Reservoir (Gallons)	Capacity of Overhead Tank (Gallons)
1.	Zia Colony	3,663.33	16,485	24" existing water line at UMDC Road	Shah Muhammad Road 48" Diameter Sewer Line	75,390	30,156
2.	Quaid-e-Azam Colony	4,828.84	21,729.78	8" existing water line nearby	Arshad Sabri Road 24" Diameter Sewer Line	107,950	43,180
3.	Ali Muhammad Goth	5,349.98	24,074.91	12" water line existed at Godhra Road	Godhra Road 36" Diameter Sewer Line	89,765	35,906
4.	Mohammadi Colony	4,685.57	21,084.06	10" water line existed at Jinnah Square Road	Jinnah Square Road 30" Diameter Sewer Line	84,560	33,824
5.	Mujahid Colony	4,560.61	20,522.74	24" existing water line nearby	36" Diameter North Nazimabad Sewer Line	127,960	51,184
6.	Future Colony	20,370.69	91,668.11	18" water line existed at Mansehra Road	Two existing Sewer lines within the colony	532,870	213,148
7.	Sherpao Colony	36,038.21	162,171.45	18" existing water line at	36" Diameter Sewer Line	1,681,090	672,436

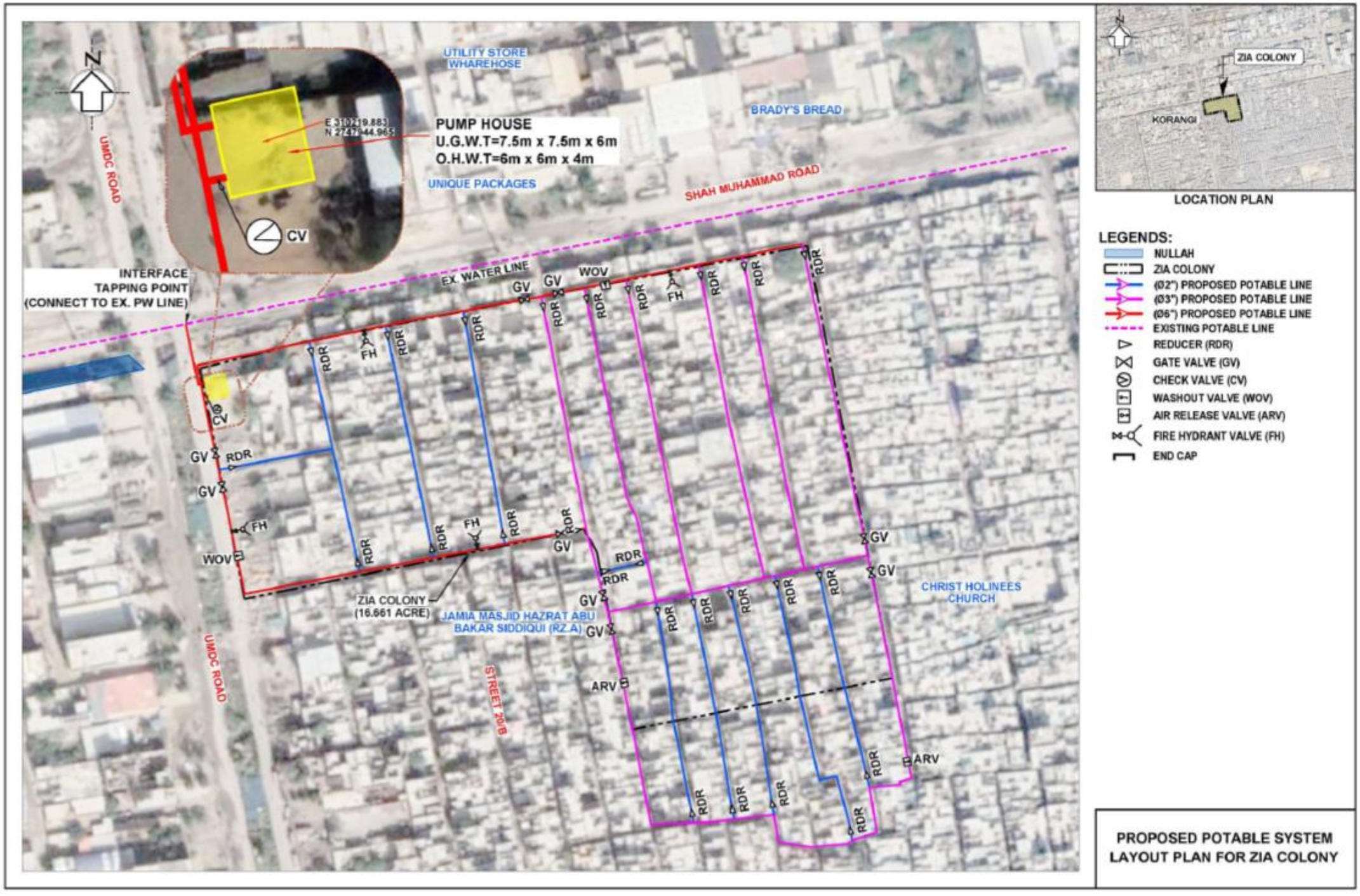
No.	Katchi Abadi Name	Length of Water Supply and Sewage Conveyance System (m)	Volume of Excavated Material (m^3)	Nearest Main Water Line for Inlet	Nearest Main Sewer Line for Disposal	Capacity of Under Ground Reservoir (Gallons)	Capacity of Overhead Tank (Gallons)
				Mehran Highway	running through Sherpao Colony		
8.	Sharif Colony	9,875.83	44,441.73	15" existing water line nearby	33" Diameter Sewer Line along Double Road	323,745	129,498
9.	Muslimabad Colony	36,503.02	163,763.59	Water line at labour square road	36" Diameter Sewer Line running through Star ground / Sherpao Road	-	-
10	Bilalabad Colony	6,323.30	28,454.85	18" water line existed at Shahrah-e-Noor Jehan	Shahrah-e-Noor Jehan 12" Diameter Sewer Line	-	-

Layout plans for proposed water and sanitation interventions in each selected Katchi Abadi are provided in **Figure A3-2**.

Figure A3-2: Proposed Water and Sanitation Interventions

1. Zia Colony

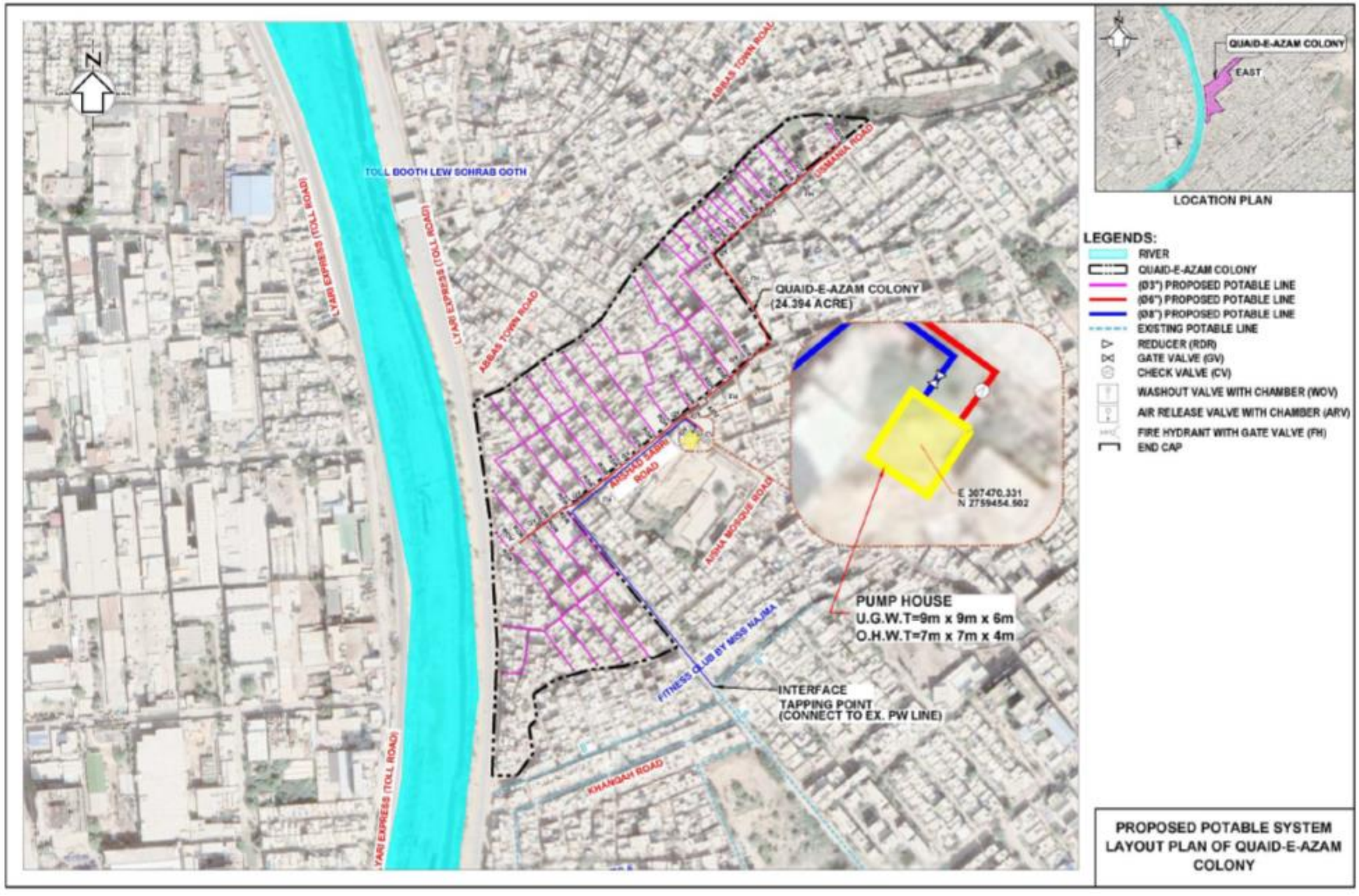
a- Water Supply System Layout



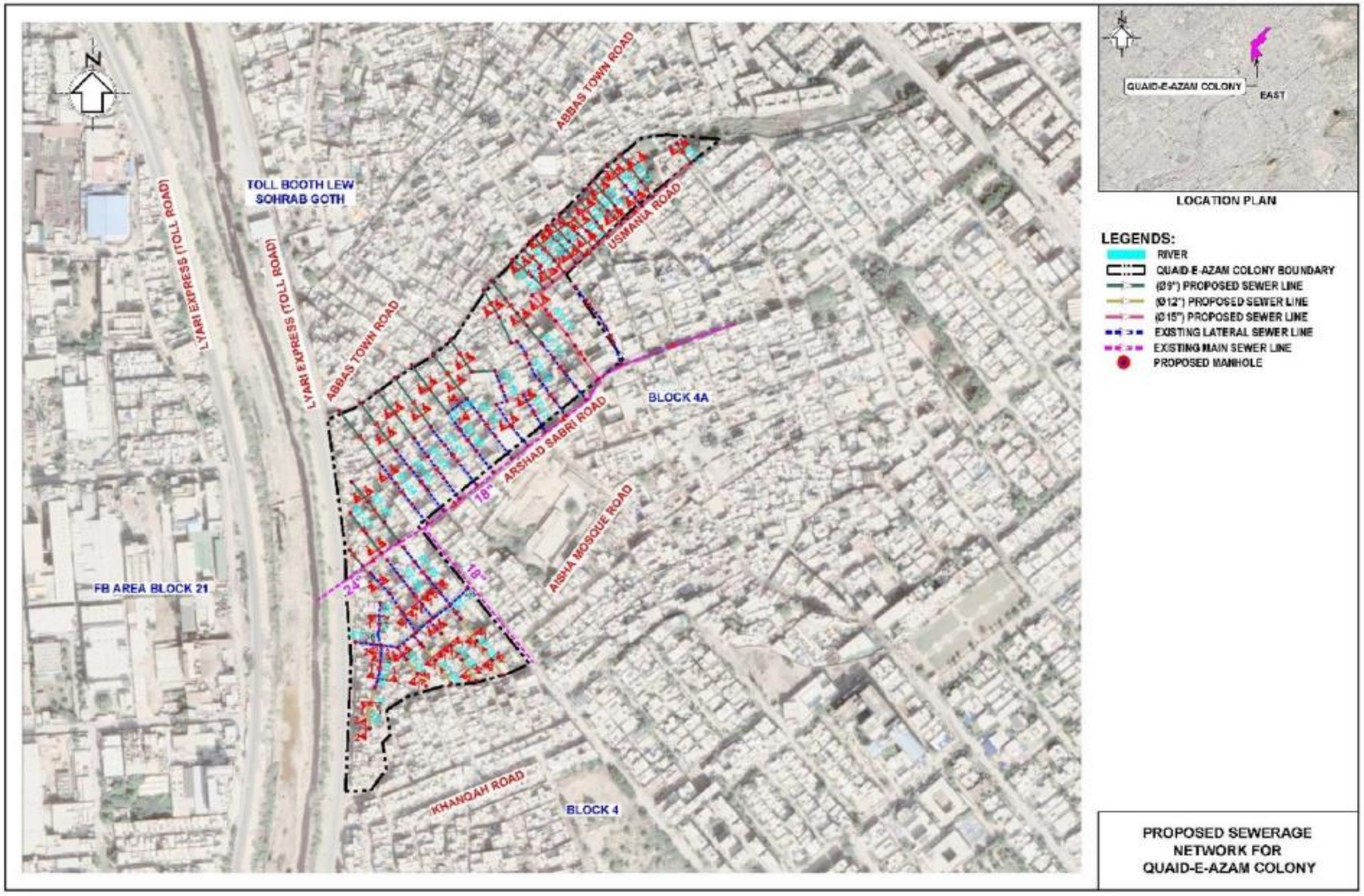
b- Sewerage System Layout

2. Quaid-e- Azam Colony

a- Water Supply System Layout

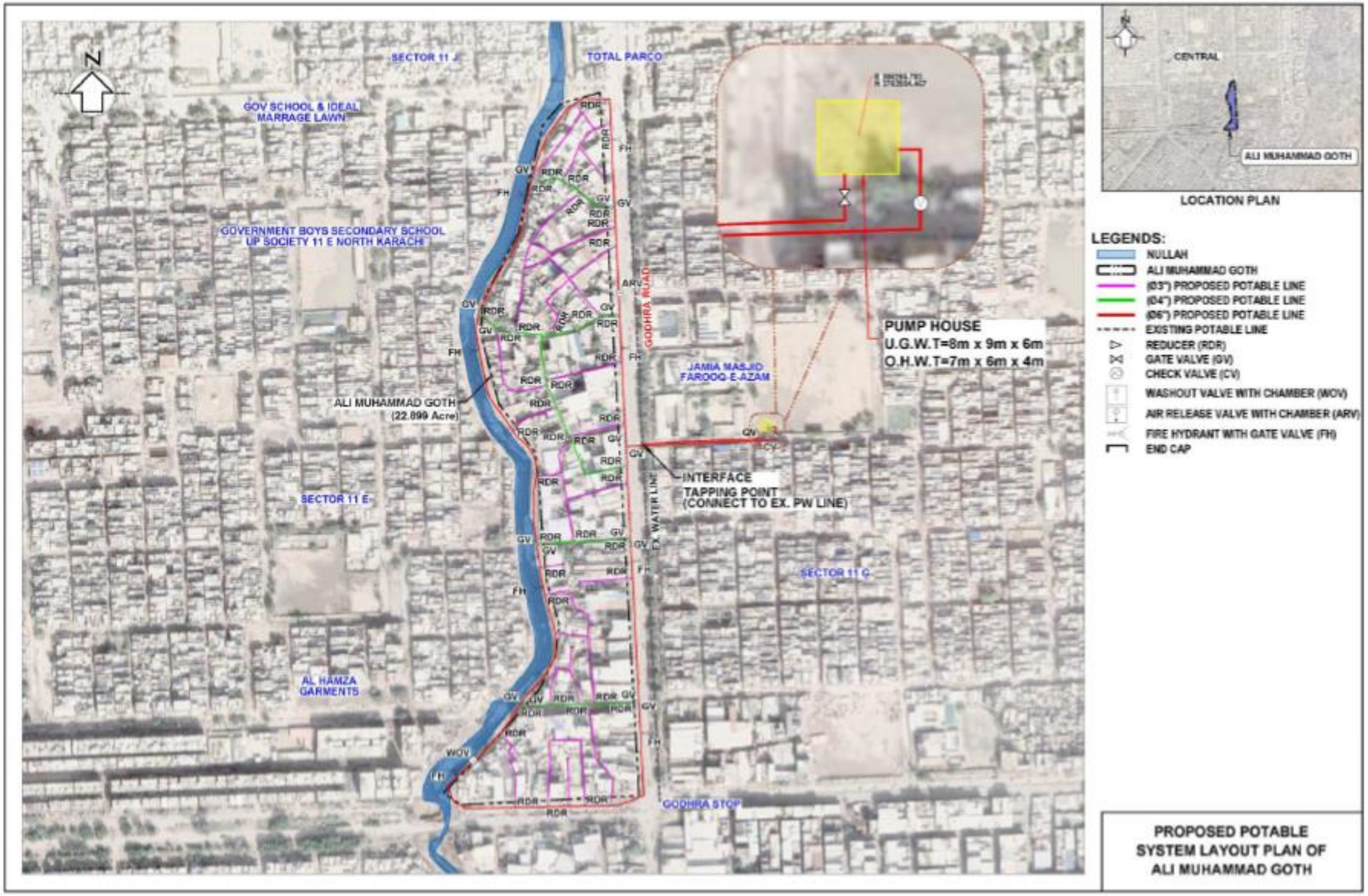


b- Sewerage System Layout

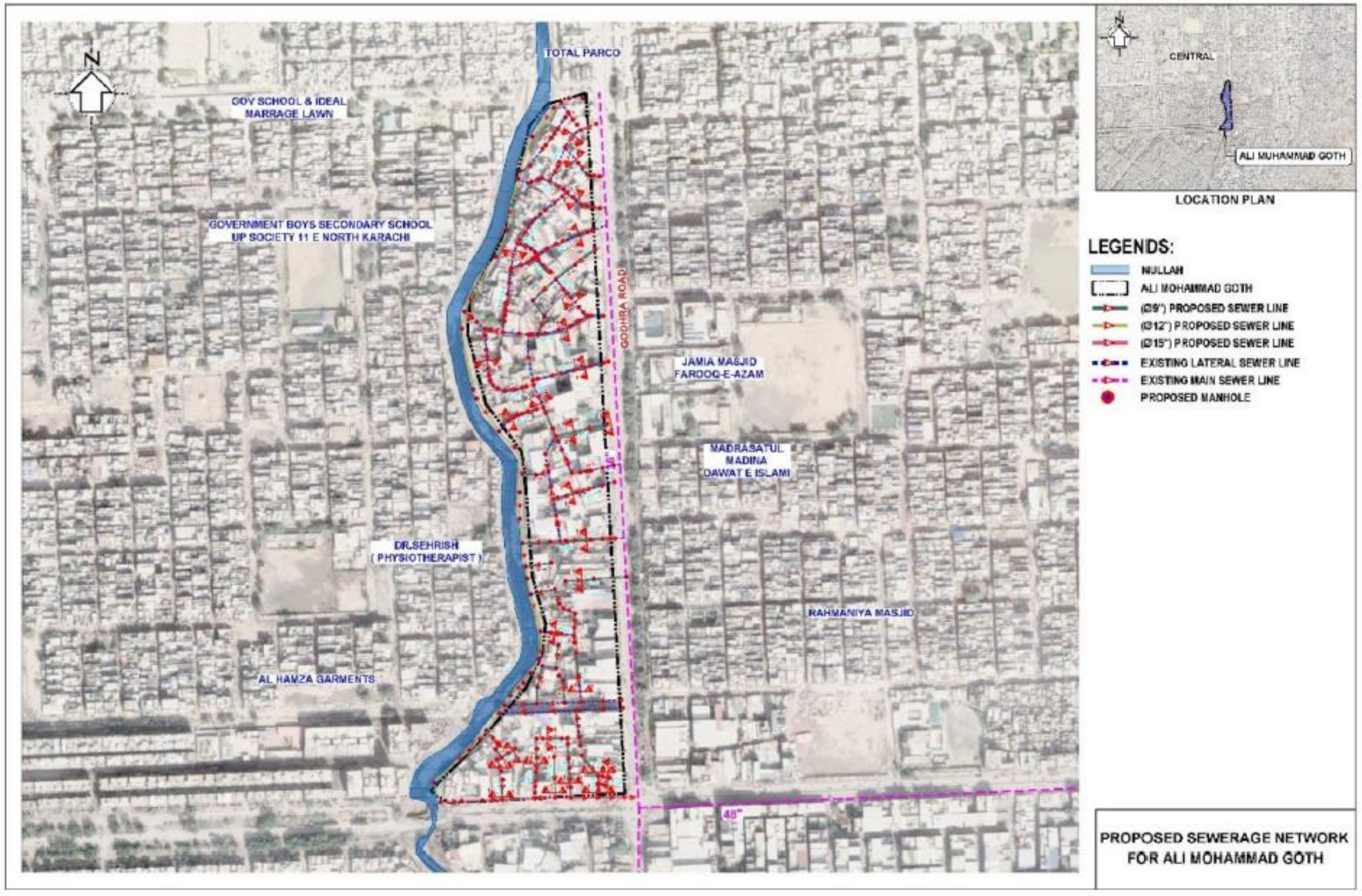


3. Ali Muhammad Goth

a- Water Supply System Layout

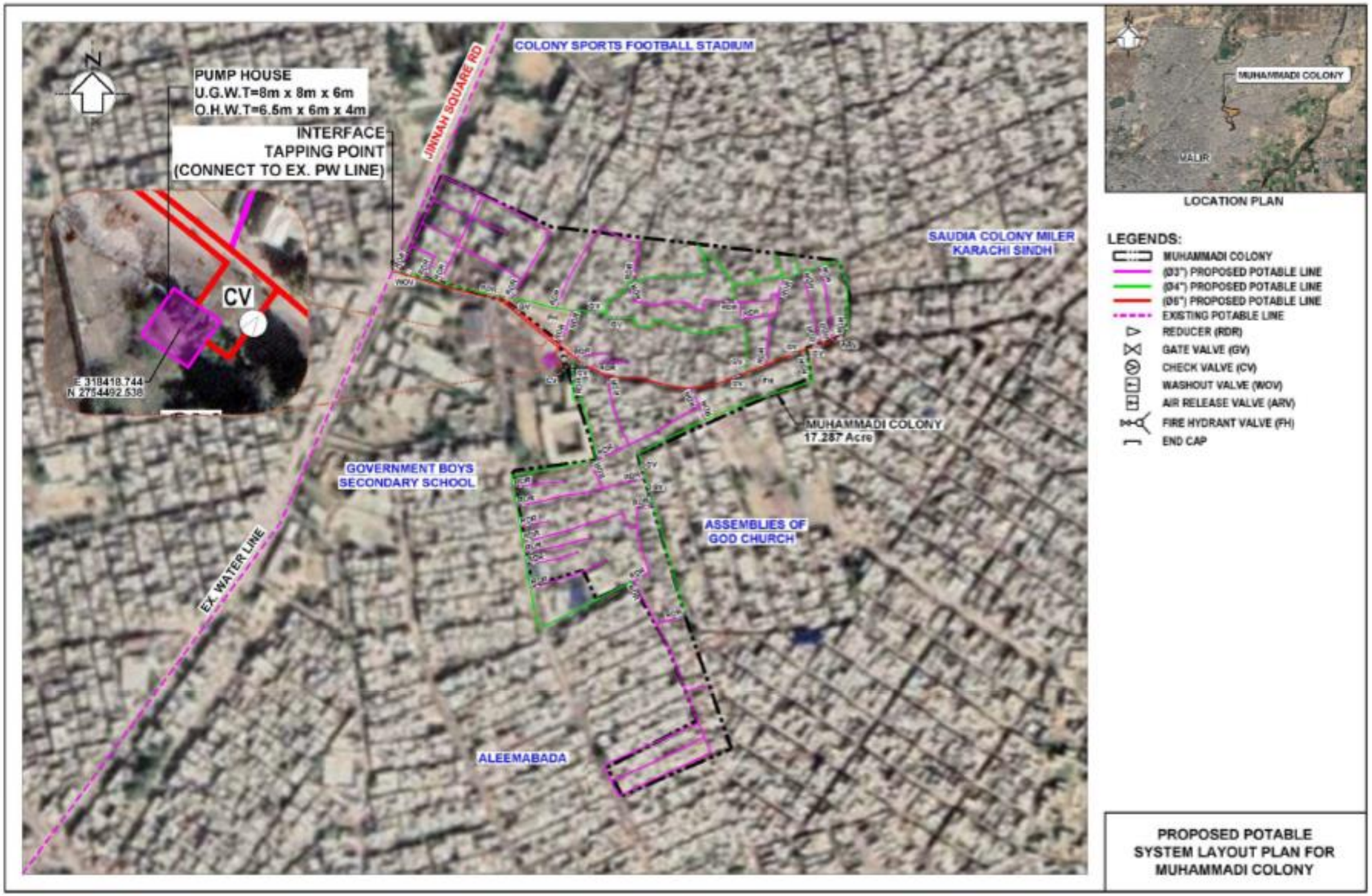


b- Sewerage System Layout

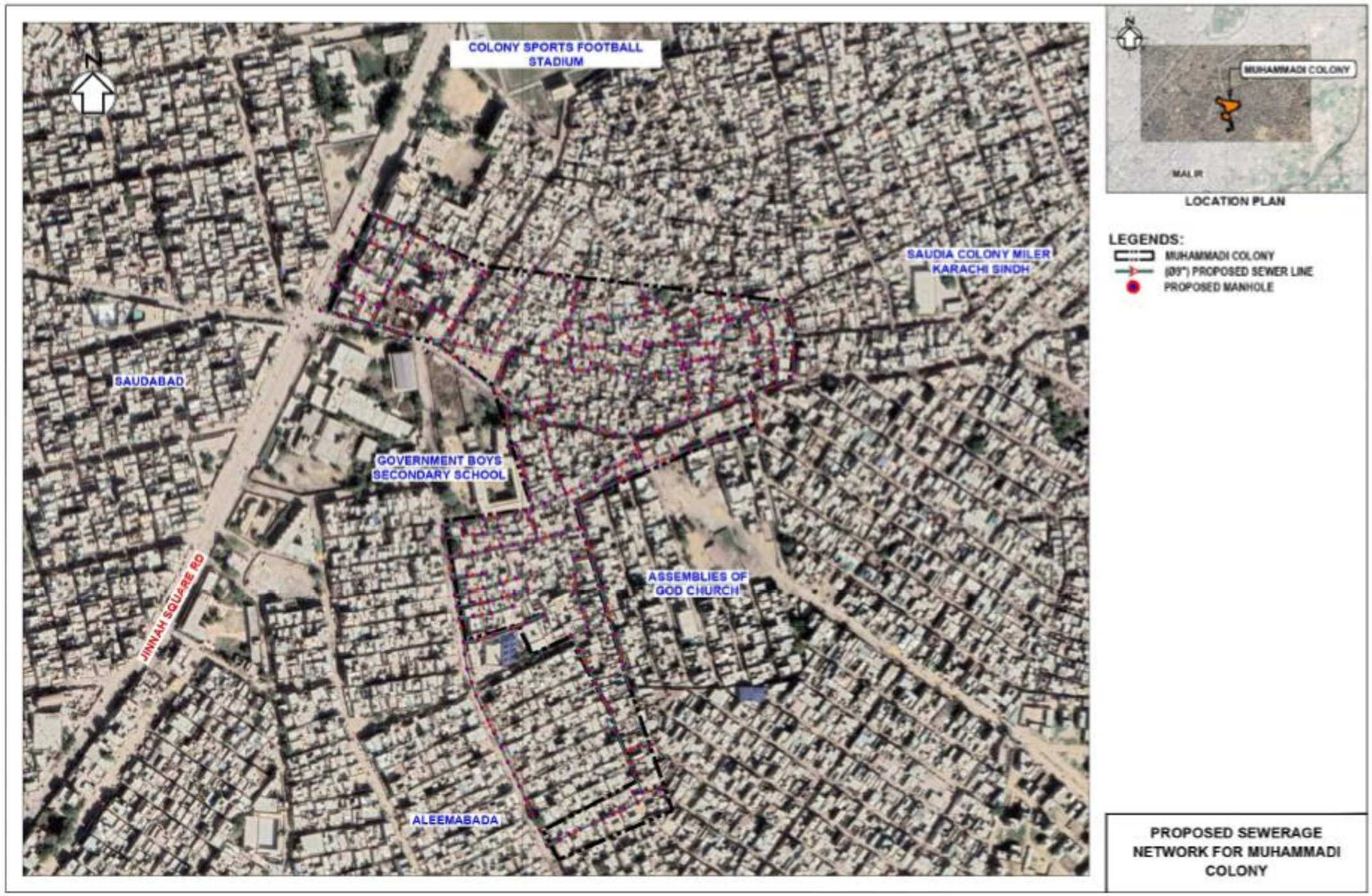


4. Mohammadi Colony

a- Water Supply System Layout

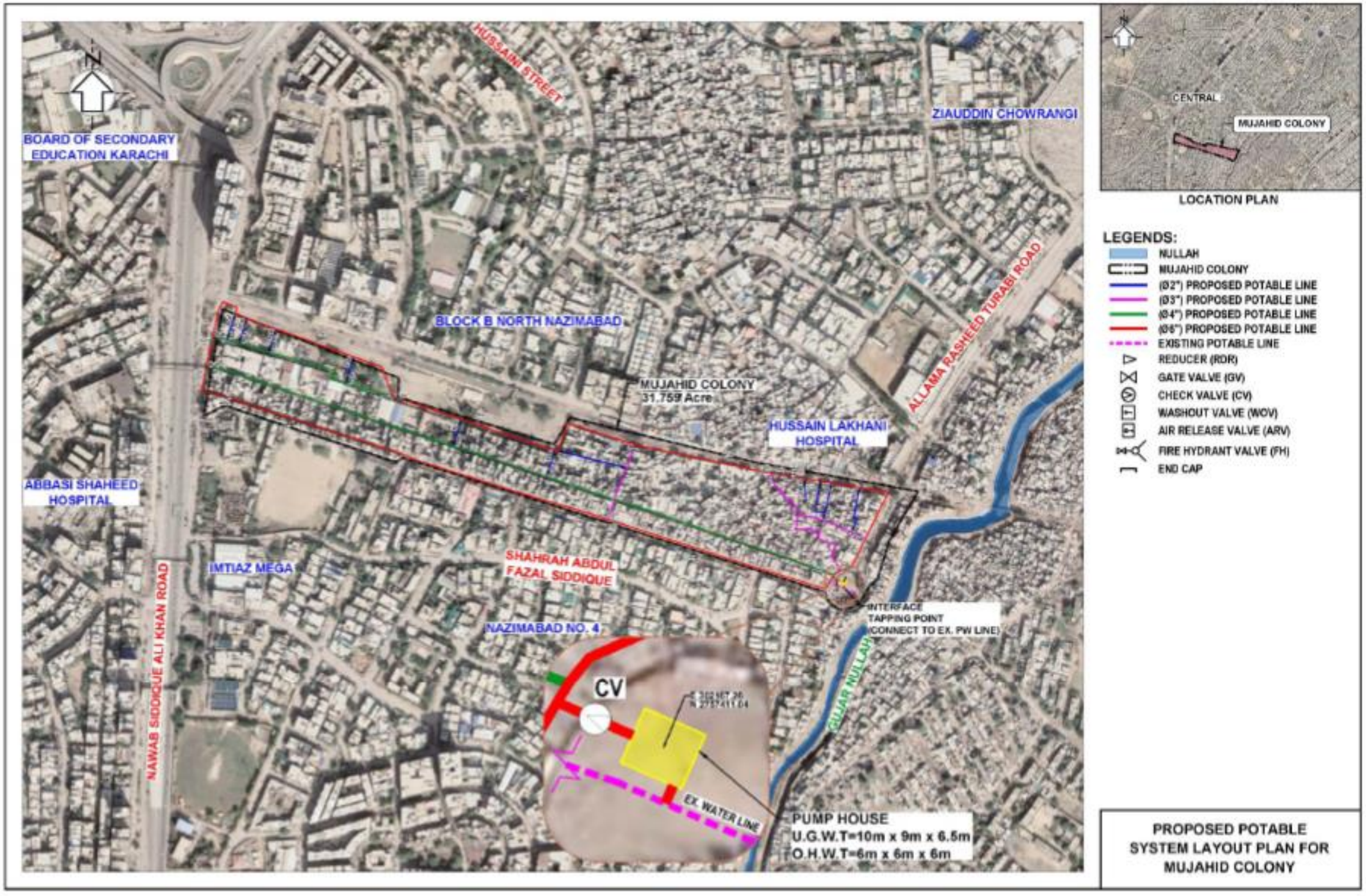


b- Sewerage System Layout

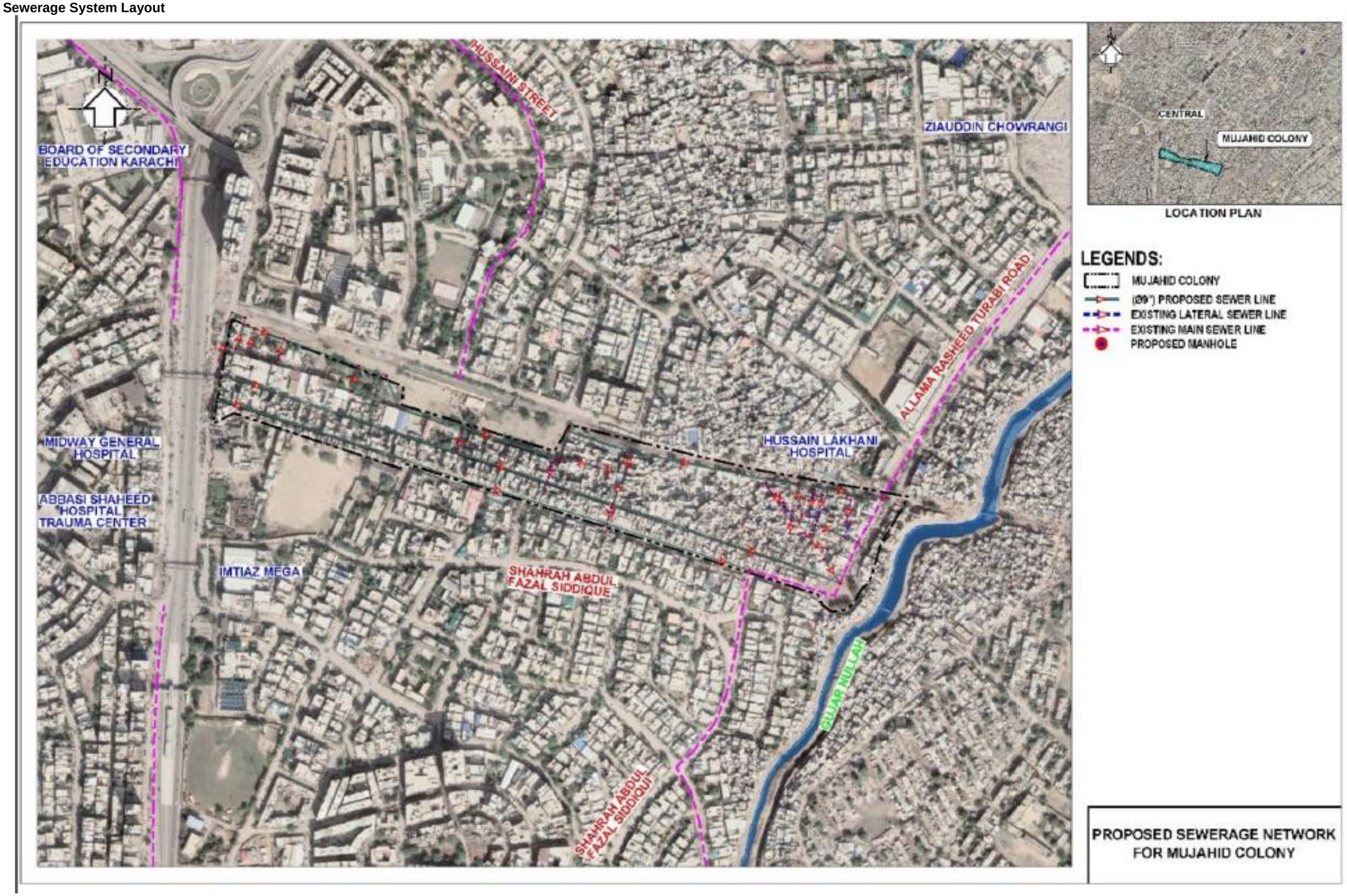


5. Mujahid Colony

a- Water Supply System Layout

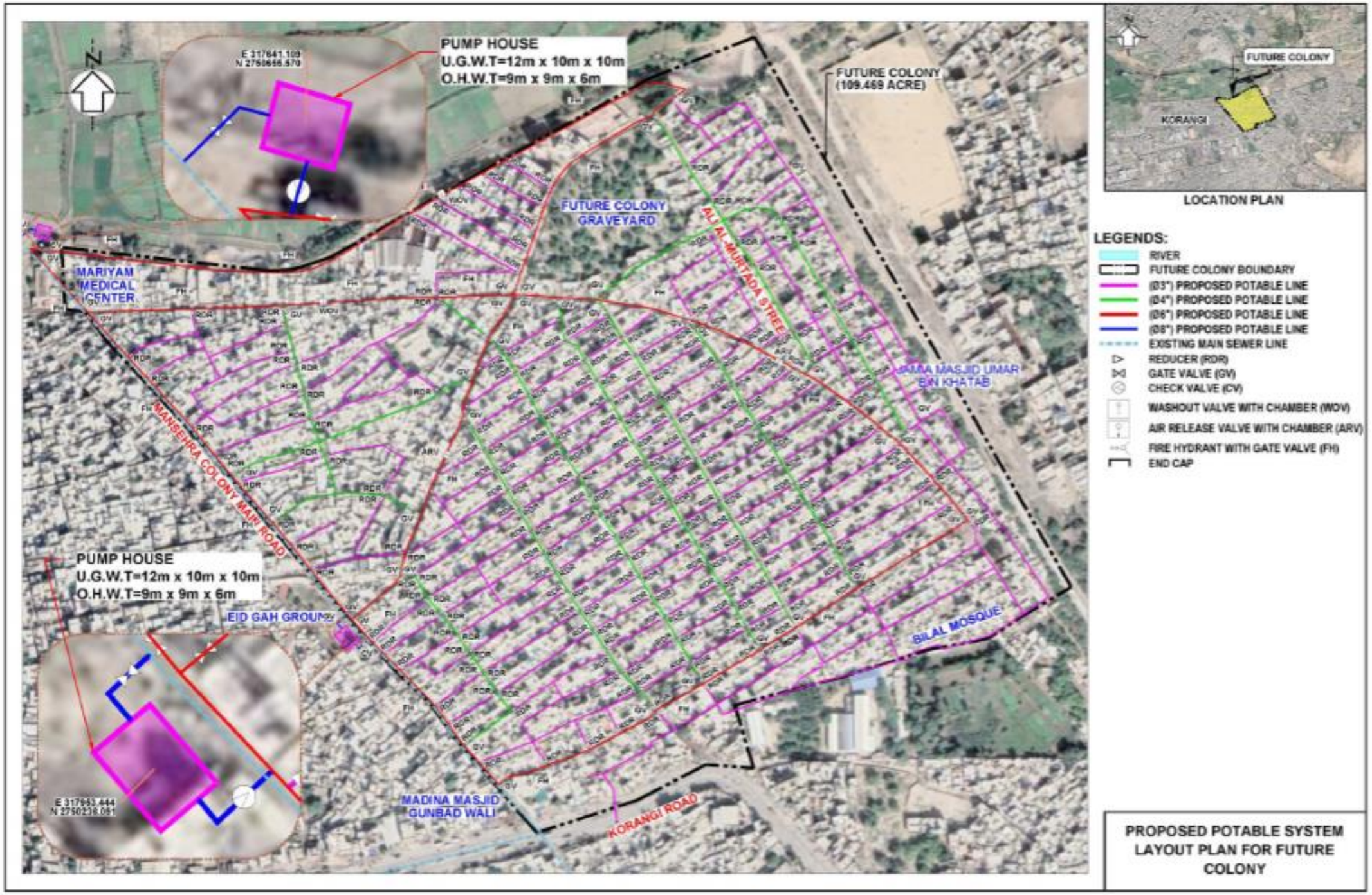


b- Sewerage System Layout

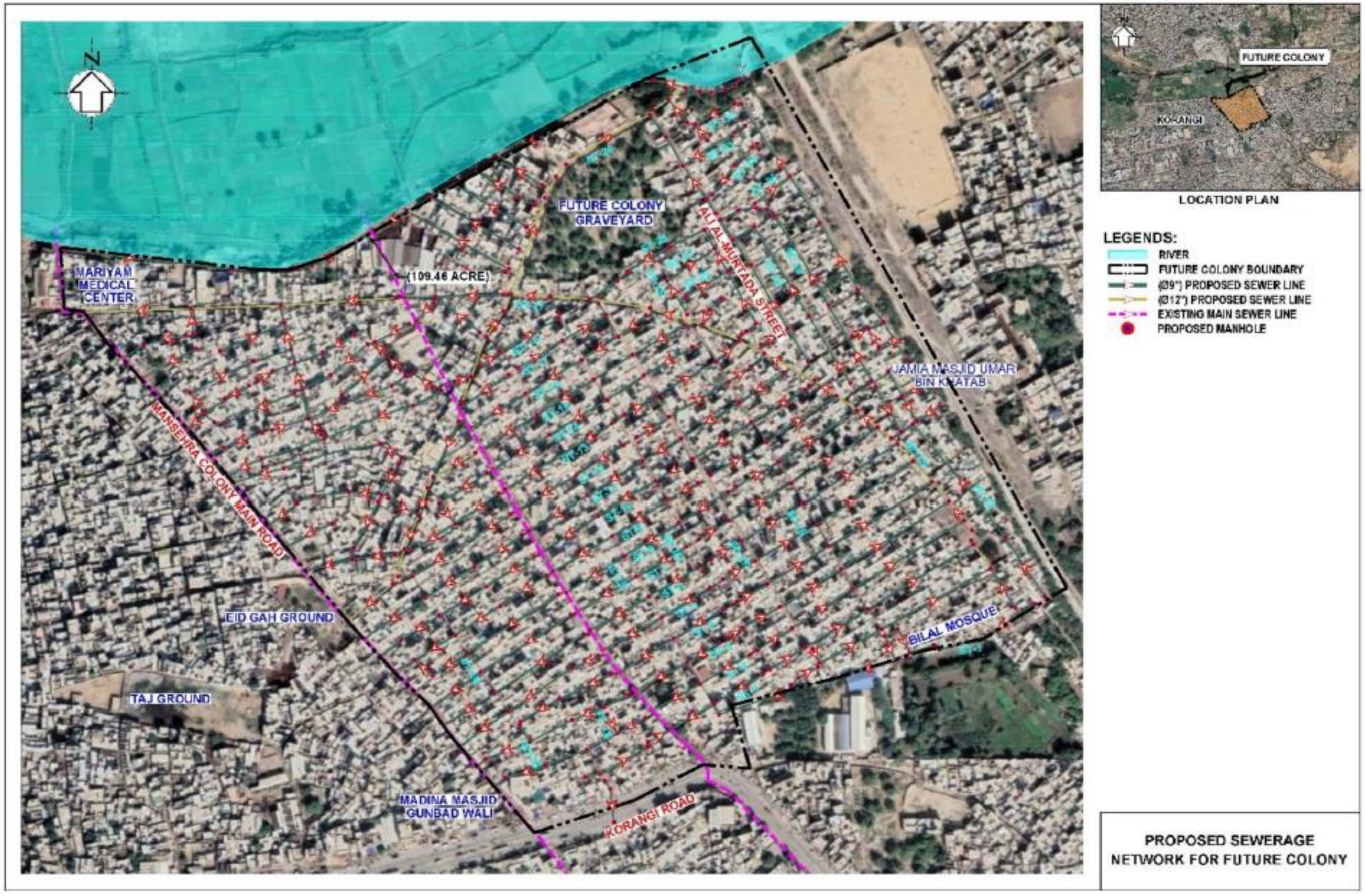


6. Future Colony

a- Water Supply System Layout

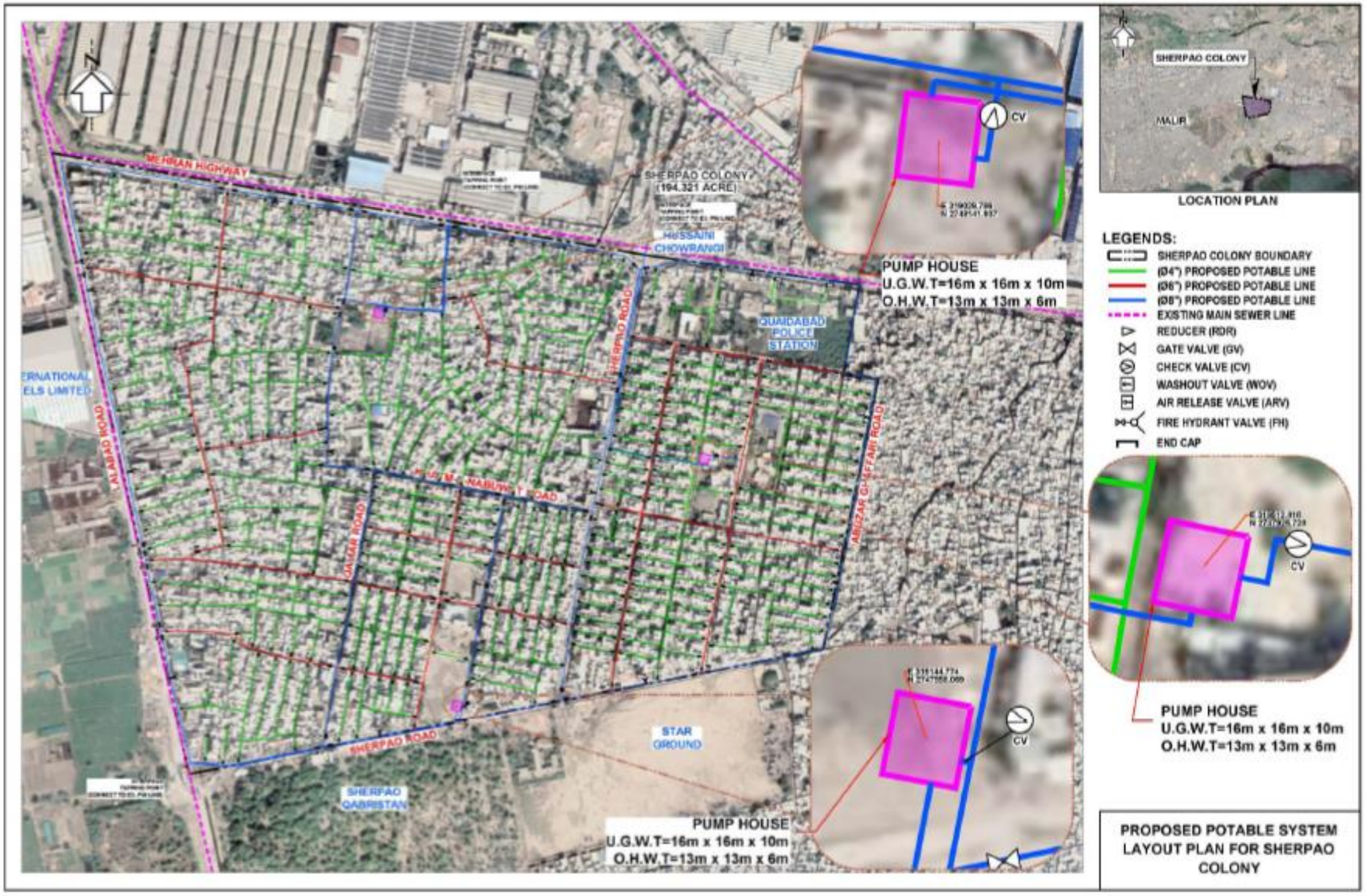


b- Sewerage System Layout

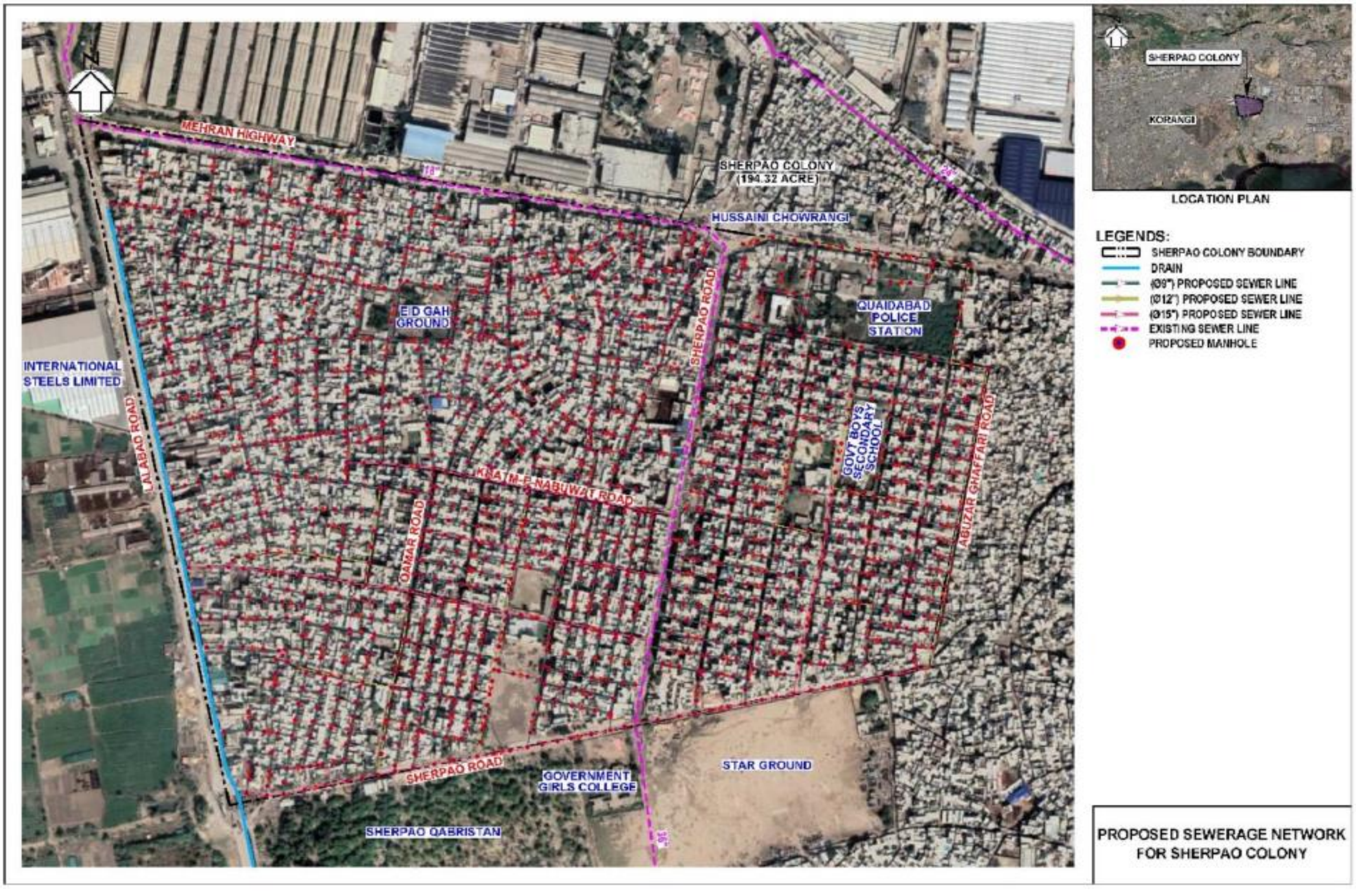


7. Sherpao Colony

a- Water Supply System Layout

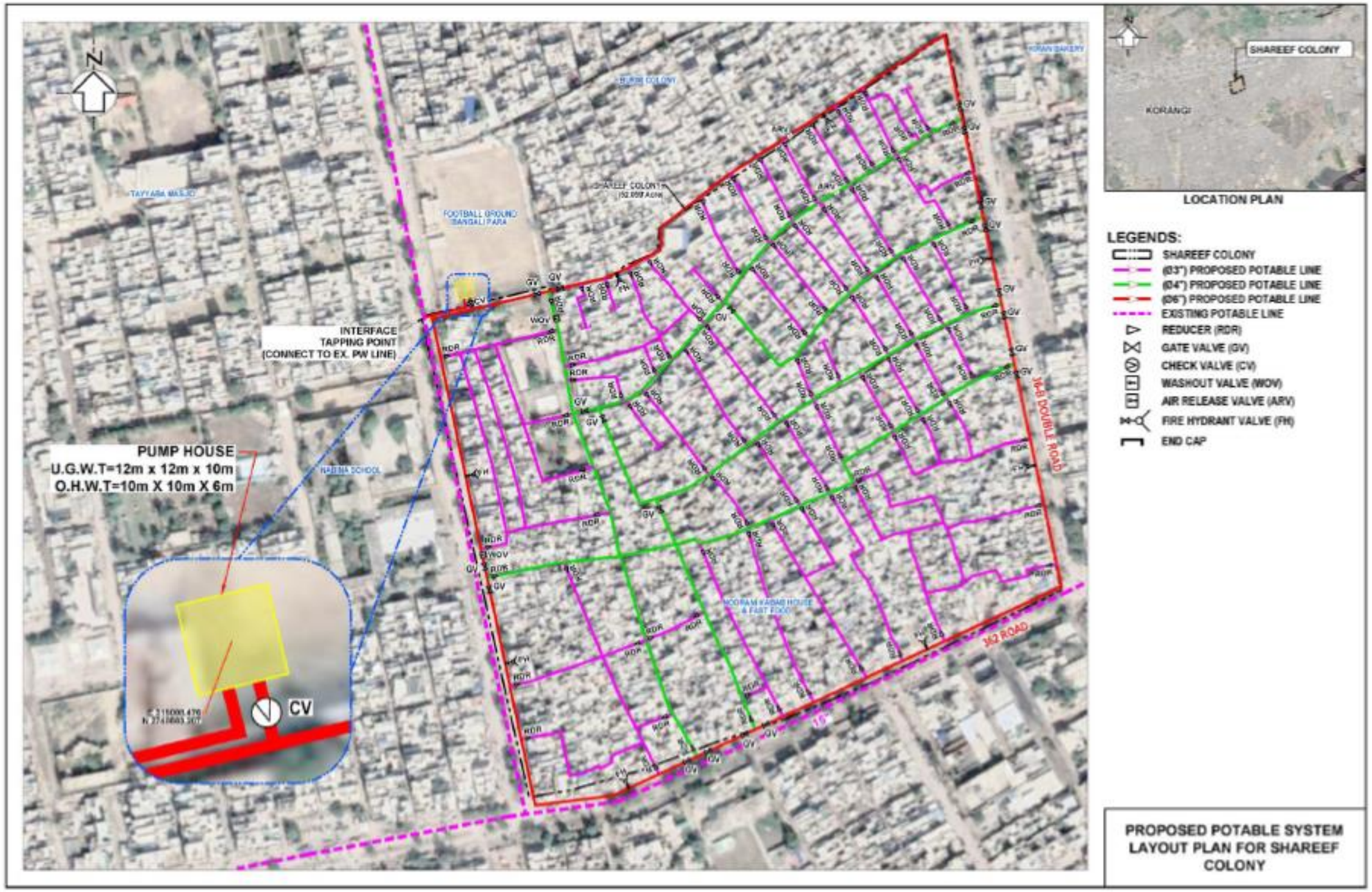


b- Sewerage System Layout

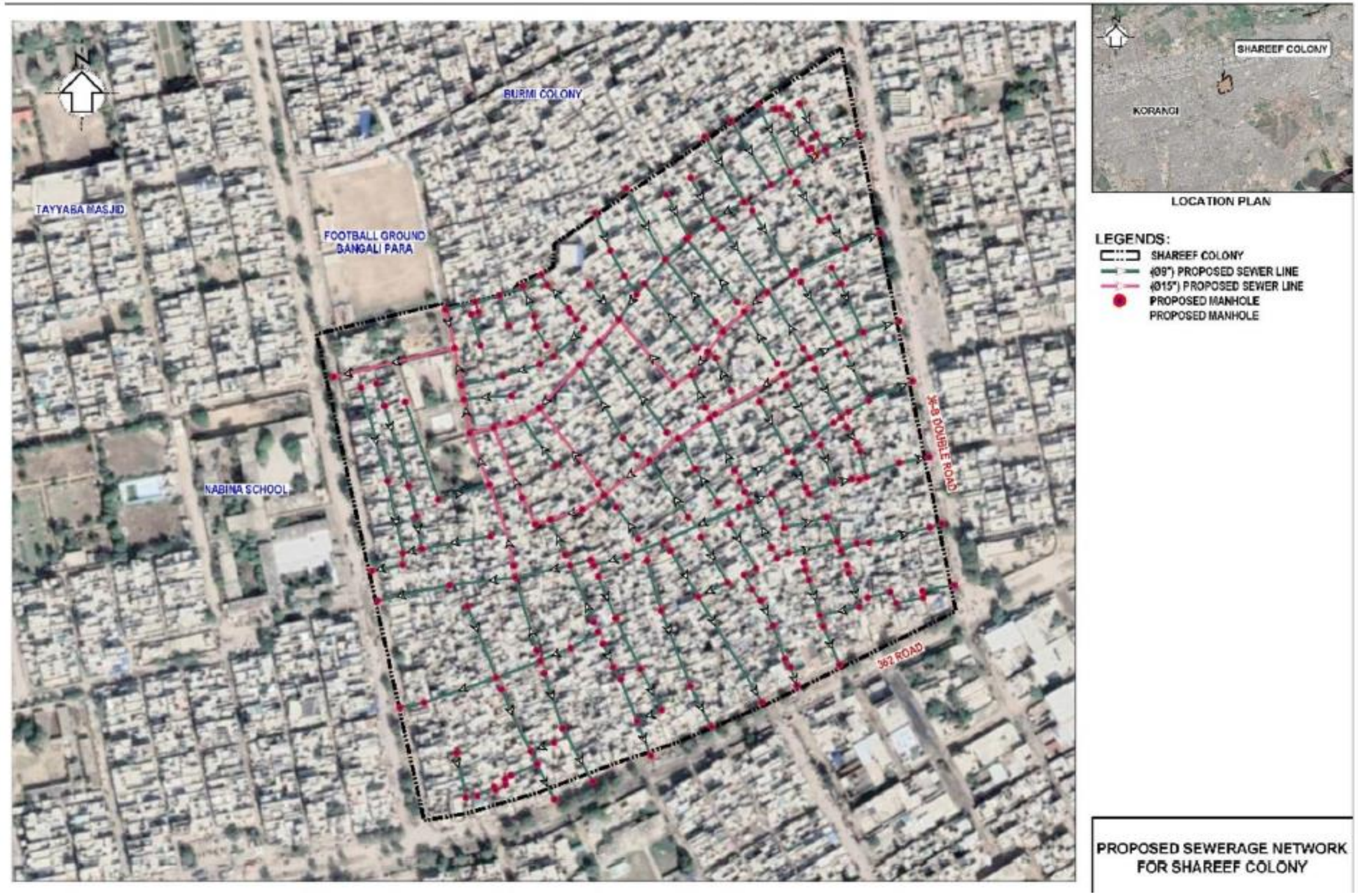


8. Sharif Colony

a- Water Supply System Layout

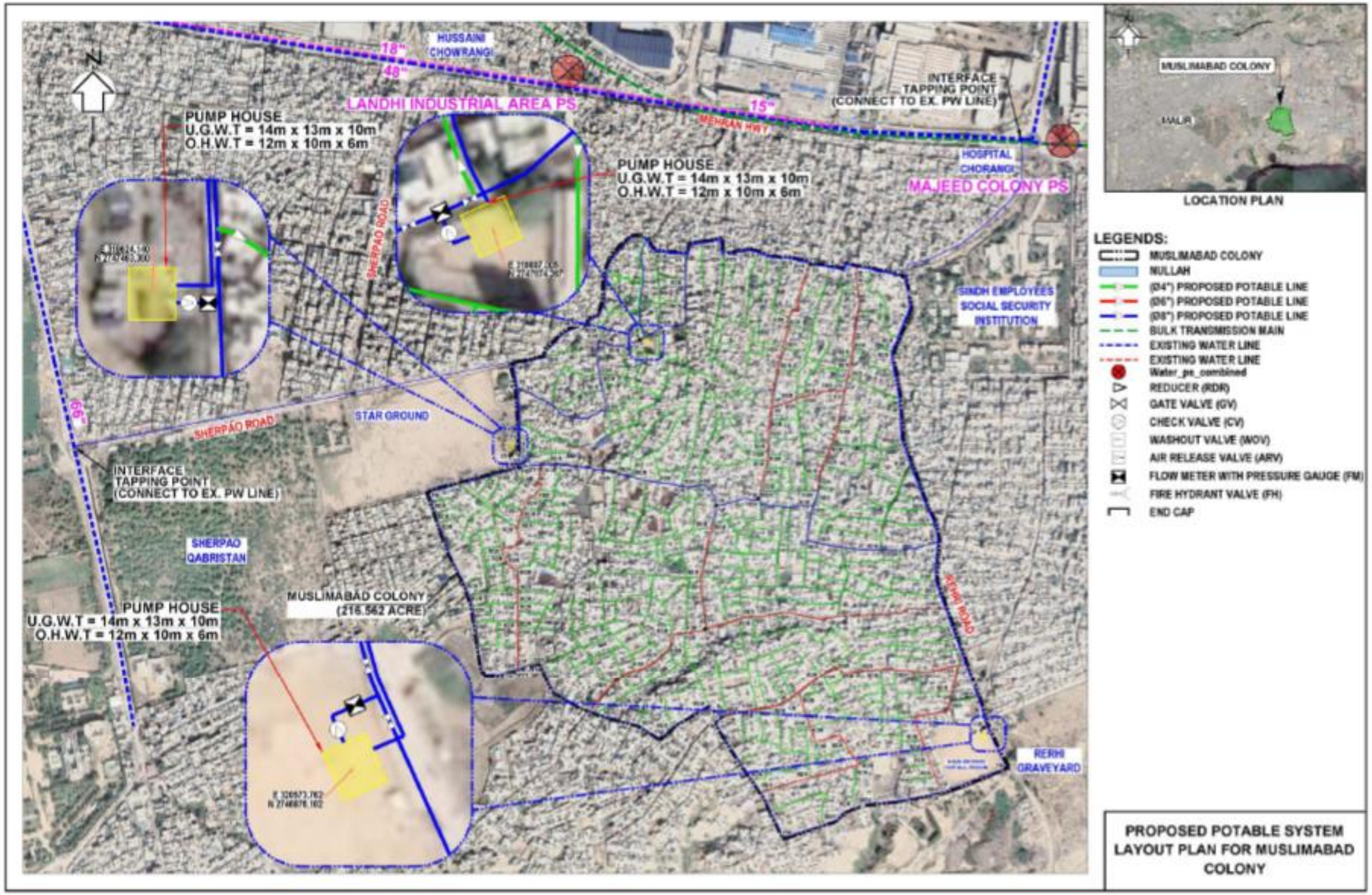


b- Sewerage System Layout

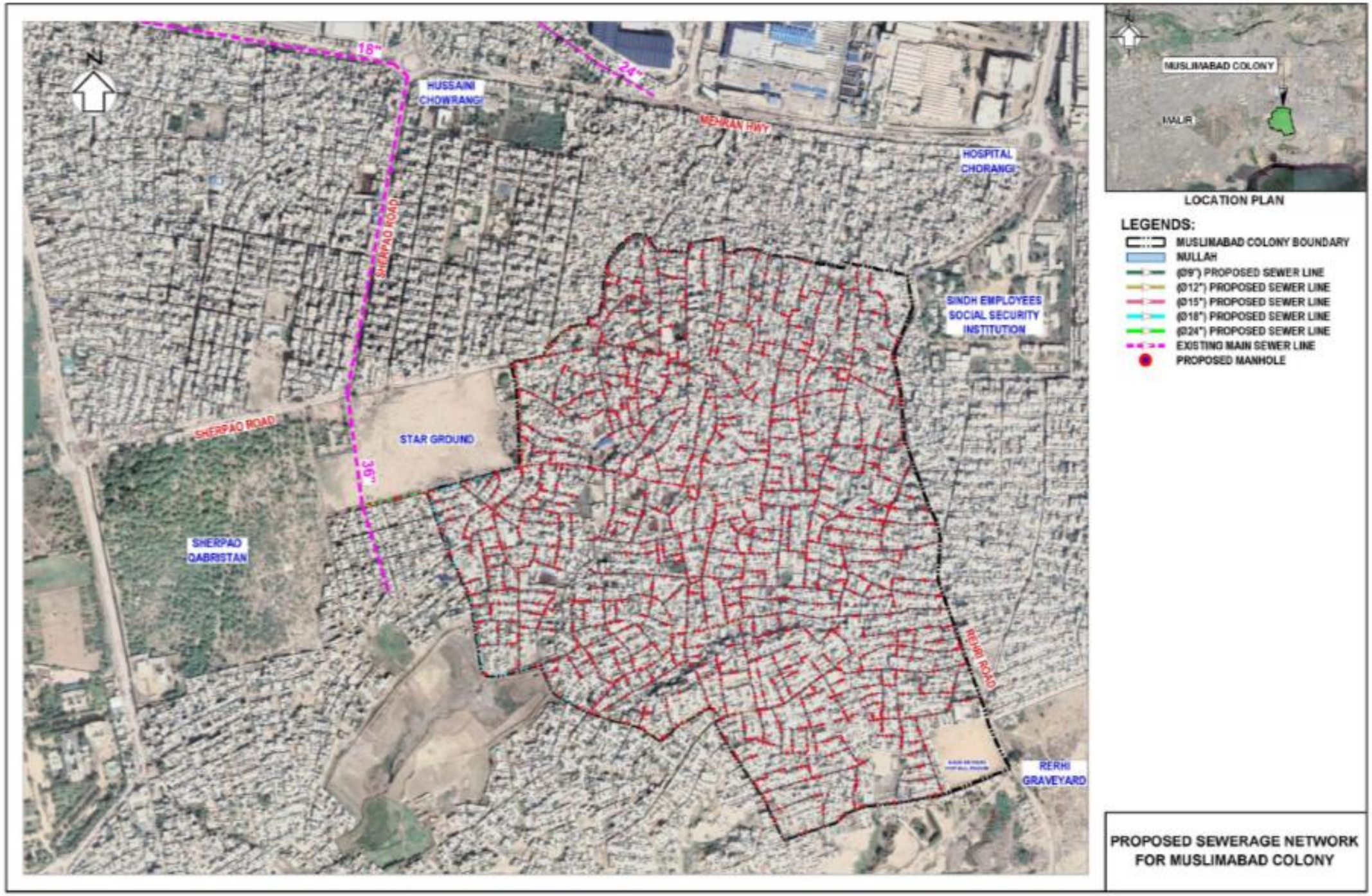


9. Muslimabad Colony

a- Water Supply System Layout

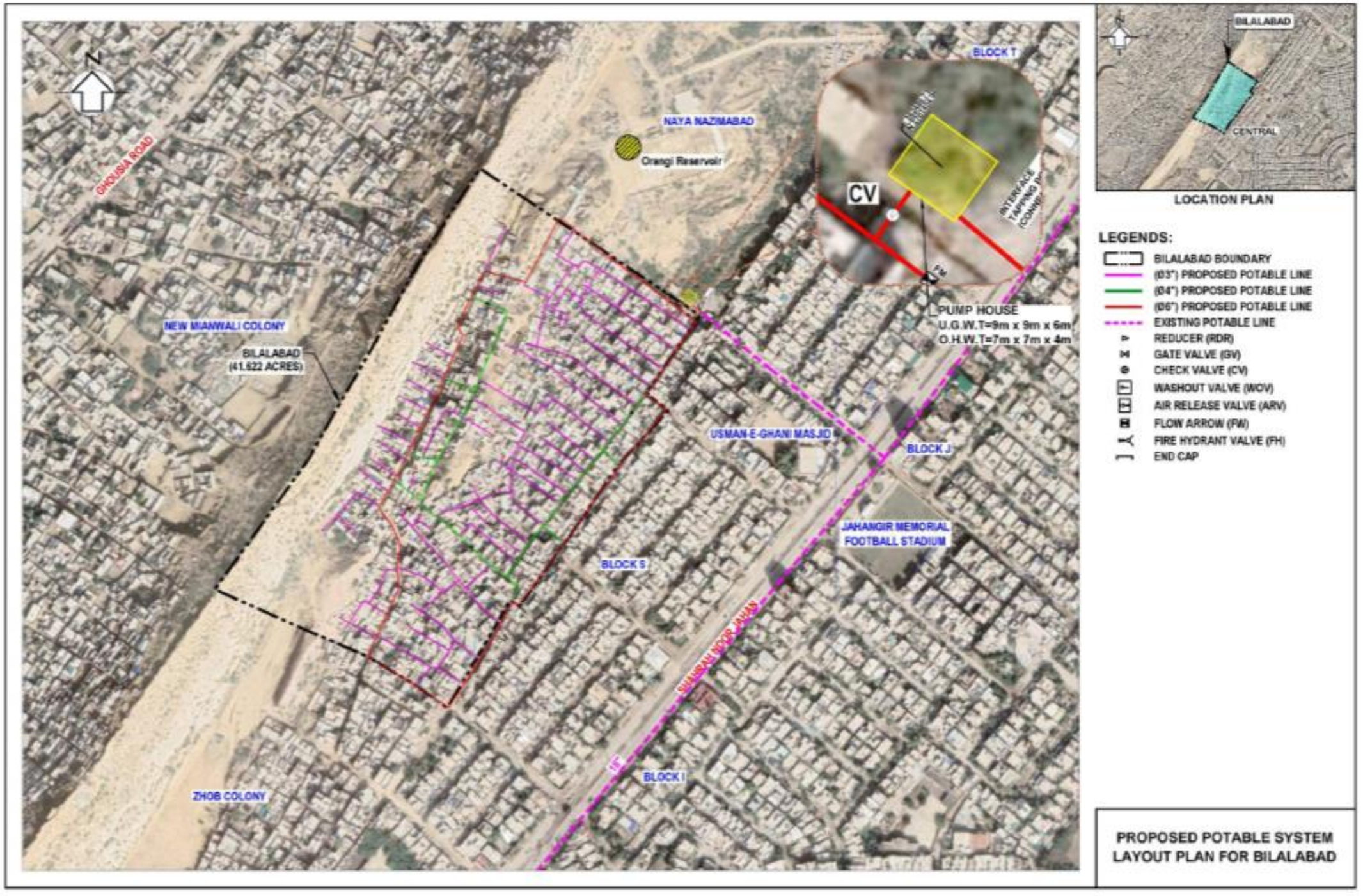


b- Sewerage System Layout



10. Bilalabad Colony

a- Water Supply System Layout



b- Sewerage System Layout

a) Manpower Requirement for Construction Phase

Approximately 25 workers will be engaged at each Katchi Abadi per day, therefore the total workforce to be employed will be approximately 250 workers including skilled and semi-skilled workers.

b) Source and Quantities of Construction Material

The materials used in construction of water supply and sewerage infrastructure, overhead/ underground tanks would include coarse aggregates (crush), fine aggregates (sand), soil, water, pipes (RCC & HDPE), cement, reinforcement, asphalt etc. All the raw materials are readily available in the local markets.

c) Estimated Quantities of Excavated Material / Surplus Material

It is estimated that approximately 594,000 m^3 of excavated material will be generated from the project activities. The excavated material will mostly be backfilled to fill the trenches. The remaining material will be utilized for related road works for grading and compacting etc. Wet sewage induced excavated material and Asbestos Cement (AC) pipes etc. (if found during excavation) as well as waste materials that cannot be recycled or reused will be disposed through licensed SEPA approved waste contractors.

d) Implementation Timeline

The overall construction period will be two years.

e) Construction Camps

The Contractor will hire local workforce at the most for the project's construction works in selected Katchi Abadis. Local workforce suitably skilled with water and sewage pipeline trenching and laying works is readily available in all areas of Karachi and the need for their permanent stay at the campsites will be minimal. The campsites will mainly be utilized for the temporary facilities such as workers washrooms, rest areas and temporary placement of construction material and only security guards will be required to have permanent stay at the campsite. There are local grounds and open spaces available in the vicinity of selected Katchi Abadis which will be utilized for setting up temporary material storage campsites by the Contractor with the approval of Supervision Consultant. The campsite locations are enumerated in **Table A3-4**.

Table A3-4: Campsite Locations

No.	Katchi Abadi Name	Campsite Location
1.	Zia Colony	Eidgah Cricket Ground – Zia Colony Lat:24.8279 Lon:67.1257
2.	Quaid-e- Azam Colony	Open Space Adjacent Jamia Masjid Umer – Quaid-e-Azam Colony Lat:24.9359 Lon:67.0967
3.	Ali Muhammad Goth	Farooq e Azam Eidgah Ground - Ali Muhammad Goth Lat:24.9698 Lon:67.0815
4.	Mohammadi Colony	Open Space near Assemblies of God Church- Mohammadi Colony - Lat:24.8942 Lon:67.2039
5.	Mujahid Colony	Shah Faisal Football Ground – Mujahid Colony - Lat:24.9203 Lon:67.0333

No.	Katchi Abadi Name	Campsite Location
6.	Future Colony	Mominabad Eidgah Ground - Future Colony - Lat:24.8548 Lon:67.2141
7.	Sherpao Colony	Eidgah Ground - Sherpao Colony - Lat:24.8372 Lon:67.2092
8.	Sharif Colony	Dr. Mohammad Ali Shah Football Ground - Sharif Colony – Lat:24.8161 Lon:67.1699
9.	Muslimabad Colony	Open Space near Fardeen Polutry Farm - Muslimabad Colony - Lat:24.8204 Lon:67.2138
10.	Bilalabad Colony	Zhob Football Ground - Bilalabad Colony - Lat:24.9505 Lon:67.0380

Overall Resources and Waste Estimation

Table A3-5 provide an estimate number of resources which are likely to be consumed and waste which is likely to be produced.

Table A3-5: Estimate of Resources Consumption and Waste Production in Construction Phase

Resource	Unit	Average per capita daily use	Use / Generation
Water (For Workers)	liters	50	12,500 liters / day
Water (For Sprinkling and Construction Use)	liters	N/A	50,000 liters / day
Domestic Solid Waste	kg	0.44[9]	110 kg / day
Excavated Material	m^3	N/A	594,000 m^3

[9] Pakistan – Waste Management Report, 2020 (Karachi: 0.44kg/capita/day)

Annexure - 4: Description of the Environment

The selected Katchi Abadis are located in in the jurisdictions of four districts of Karachi that include District Korangi, District East, District Central and District Malir.

Physical Environment

Built-up Environment

Consistent with the other numerous Katchi Abadis of the city, the built-up environment of selected Katchi Abadis is characterized by a mix of permanent and temporary structures, including brick and concrete buildings as well as shanties and other improvised shelters. The settlements are often densely populated, with narrow streets and limited access to basic services and infrastructure such as clean water and sanitation. The limited access to basic services and infrastructure contributes to poor living conditions and health outcomes for residents of these Katchi Abadis, as well as social and economic exclusion.

Climate

According to the Koppen Climate Classification, the project area lies in the Subtropical - Arid Climate Zone, with mild winters and hot summers. Due to the proximity to the coastline, the climate of the project area is influenced by sea breezes, which results in less warm evenings throughout the year. Humidity, however, generally remains high. Winds for more than half the year, including the monsoons blow from south-west to west in the project area. The hottest months are April to June whereas December and January are relatively colder months of the year. Based on the rainfall data recorded between January 2012 to December 2021, July and August are the wettest months in the project area. The last few years have witnessed a sharp rise in the heat waves occurrences in Karachi and its outskirts during May to September. Since heatwave keeps the potential to directly impact the health and performance of the site workers and makes the workers susceptible of getting affected by heat stroke, necessary mitigation measures will be implemented during project implementation to protect the workers.

Land use

The predominant land use in the vicinity of the project intervention areas in all the selected Katchi Abadis is residential settlements.

Air, Noise, Water Quality Monitoring

Air, noise and water quality monitoring was carried out in the project area at three locations during the first week of March 2022. Monitoring points were selected with the objective that they are located in proximity to the project intervention areas as well as to the nearby residential settlements.

Air Quality Monitoring Zones / Coverage Area

Based upon the review of published literature[10] and past experience of the monitoring laboratory, 5 km zone has been considered as the coverage area for each sampling point in terms of ambient air quality.

[10] https://www.sciencedirect.com/book/9780124017337/fundamentals-of-air-pollution

Therefore, all the selected Katchi Abadis under the project have been covered through three 5 km monitoring zones. Details of monitoring locations and zones are provided in **Table A4-1** and **Figure A4-1**.

Table A4-1: Details of Air, Noise and Water Quality Monitoring Locations

Spot	Katchi Abadis Covered	Distance of Monitoring Spot from Katchi Abadis	Latitude	Longitude
Spot 01	Ali Mohammad Goth Bilalabad Quaid e Azam Colony Mujahid Colony	3 km 2 km 3 km 3 km	24.9425° N	67.0616° E
Spot 02	Shareef Colony Zia Colony	3 km 2.5 km	24.8198° N	67.1481° E
Spot 03	Future Colony Sherpao Colony Mohammadi Colony Muslimabad Colony	0.7 km 3 km 3.5 km 3.7 km	24.8626° N	67.2068° E

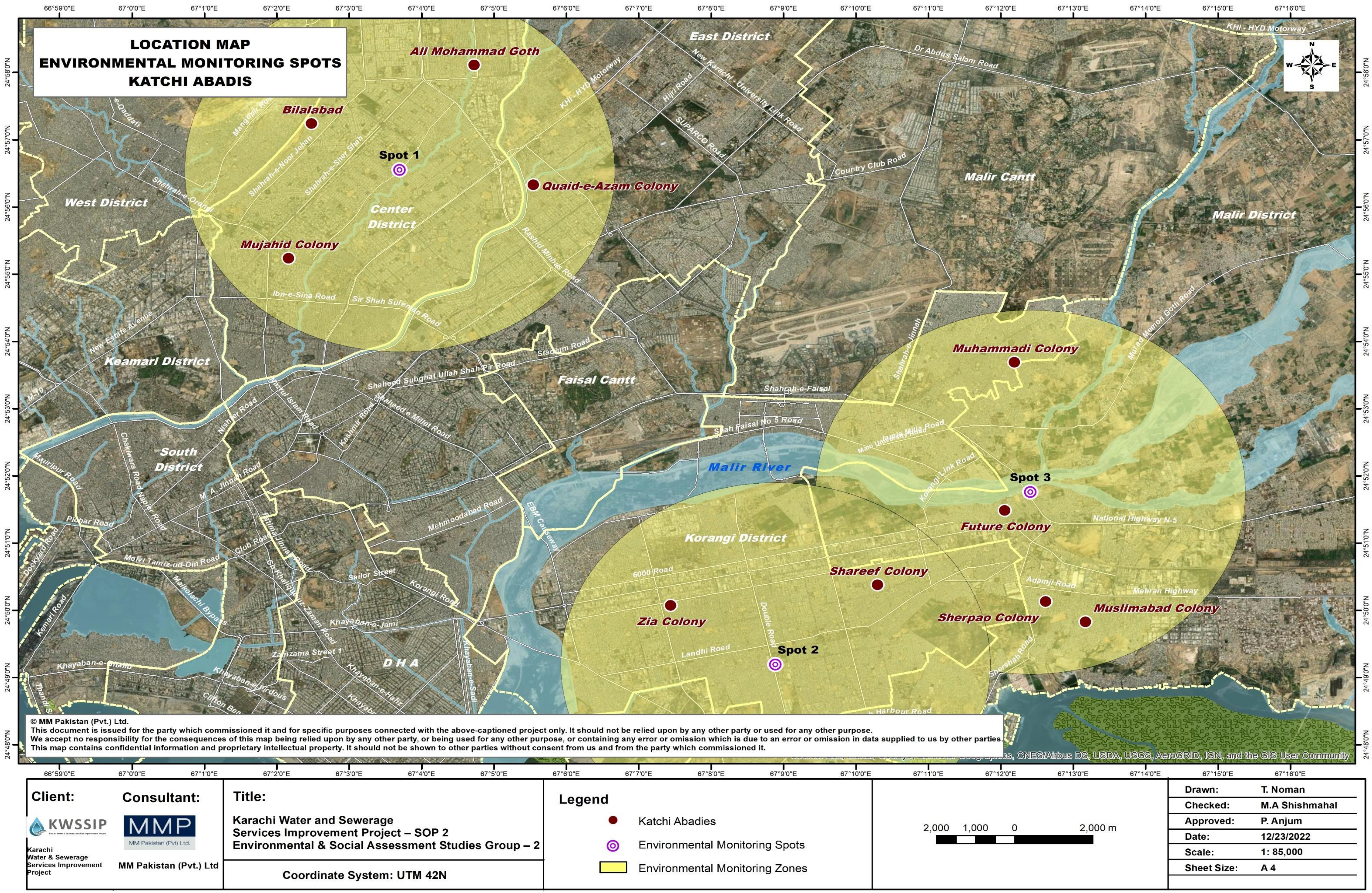


Figure A4-1: Environmental Monitoring Locations

Air Quality

Sampling was performed for 24-hour period at each site. **Table A4-2** presents the observed average concentrations for ambient air quality parameters, such as, particulate matter (PM10 and PM2.5), carbon monoxide (CO), oxides of nitrogen as NO, total suspended particles (TSP), sulphur dioxide (SO2) and compares these with the SEQS and WHO / WBG Standards. According to the results, PM2.5 and PM10 values have been found exceeding the standards at all three locations, whereas all the other parameters were found within the limits. It is anticipated that since the sampling locations experience heavy traffic movement throughout the day, the major reason for excessive air pollutant levels is vehicular emissions. Overall, the level of vehicle fitness in Karachi as well as almost all around the country is poor and incomplete combustion of fuel is a major source of PM2.5 emissions. Another factor is the poor road conditions, which also paves the way for excessive PM2.5 and PM10 emissions. As the air pollutant levels are already towards the higher side, the project will implement strict air pollution control measures to ensure that it does not aggravate the prevailing baseline conditions.

Table A4-2: Ambient Air Quality Level

No.	Measuring Parameter	Unit	SEQs / WBG Limit	Spot 1 Covering Ali Mohammad Goth Bilalabad Quaid e Azam Colony Mujahid Colony	Spot 02 Covering Shareef Colony Zia Colony	Spot 03 Covering Future Colony Sherpao Colony Mohammadi Colony Muslimabad Colony
1	Oxides of Nitrogen as NO	(µg/m^3)	40	12.5	39	20.8
2	Sulfur Dioxide (SO_2)	(µg/m^3)	40	Nil	4	4.2
3	Carbon Monoxide (CO)	(mg/m^3)	4 (for 8 hrs)	4	1.8	2
4	Total Suspended Particulate (TSP)	(µg/m^3)	500 µg/m^3	134.83	136.9	270
5	Particulate Matter ($PM_{2.5}$)	(µg/m^3)	15	53.54	54.84	40.42
6	Particulate Matter (PM_{10})	(µg/m^3)	45	46.58	47.67	54.79
7	Ozone (O_3)	(µg/m^3)	130	14	17	17
8	Lead (Pb)	(µg/m^3)	1.5	ND	0.02	0.8

Noise

Noise monitoring was undertaken for 24-hour period at each site. The observed values were overall found to be higher than the limits mainly due to excessive movement of private and commercial vehicles both in the day and nighttime. As most of the observed noise levels are already towards the higher side, the project will implement strict noise control measures to ensure that it does not aggravate the prevailing baseline conditions.

Table A4-3 presents the observed day and nighttime noise results.

Table A4-3: Noise Monitoring

No	Monitoring Location	Time	Category	Measured Values	SEQS	WHO / WBG
1	Spot 1 Covering Ali Mohammad Goth Bilalabad Quaid e Azam Colony Mujahid Colony	Day	Residential	71.2	55	55
		Night		60.27	45	45
2	Spot 02 Covering Shareef Colony Zia Colony	Day	Residential	68.65	55	55
		Night		53.23	45	45
3	Spot 03 Covering Future Colony Sherpao Colony Mohammadi Colony Muslimabad Colony	Day	Residential	62.17	55	55
		Night		56.21	45	45

Water Quality

Water samples have been collected from taps whereas the main sources of water supply were mainly ground water bores. The testing was performed as per APHA methods. Results of the monitoring are given in **Table A4-4**. The results showed presence of bacterial contamination in all water samples, whereas all other parameters were found within the SEQS / WHO limits. Generally, the ground water quality all over Karachi is very poor due to the intrusion of sewerage into ground water aquifers as the sewerage system of the city is overall in a very poor state. Overflowing of sewerage gutters are common in almost every nook and corner of the city, especially in the lower to lower-middle and middleclass settlements. Damaged sewerage and water supply system and intrusion of sewerage into water distribution lines is also a common problem. It has also been recorded that private water filtration plants are common in the sampled areas and the residents purchase filtered water from them for drinking purposes.

Table A4-4: Water Quality Results

No	Measuring Parameters	Unit	Testing Method	SEQs Limits	WHO / WBG	Spot 01	Spot 02	Spot 03
1	Color	TCU	Pt-Co	< 15 TCU	< 15 TCU	1	2	<1
2	Taste	Taste	Sensory Evolution	Objection / Non-Objection	Objection / Non-Objection	Non-Objection	Non-Objection	Non-Objection
3	Odor	Odor	Sensory Evolution	Objection / Non-Objection	Objection / Non-Objection	Non-Objection	Non-Objection	Non-Objection
3	Turbidity	NTU	APHA-2130	< 5 NTU	< 5 NTU	1	0.9	<1
5	Total Hardness as CaCO3	mg/l	APHA-2340	< 500	-	180	110	150
6	Total Dissolved Solids (TDS)	mg/l	APHA-2450C	< 1000	< 1000	518	374	351
7	pH @ 25°C	pH	ASTM-1293	6.5 - 8.5	-	7.35	7.1	7.53
8	Aluminum (AL)	mg/l	ASTM D-857	<0.2	0.2	0.03	0.095	0.04
9	Antimony (Sb)	mg/l	APHA 3111 Sb	<0.005	0.02	ND	0.0011	ND
10	Arsenic (Ar)	mg/l	Merck Kit Method	< 0.05	0.01	0.02	ND	0.022
11	Barium (Ba)	mg/l	APHA-D3651	0.7	0.7	0.024	0.12	0.019
12	Boron (B)	mg/l	APHA 4500-B	0.3	0.3	0.15	0.098	0.09
13	Cadmium (Cd)	mg/l	ASTM D-3557	0.01	0.003	0.01	ND	0.01
14	Chloride (Cl^-)	mg/l	APHA 4500-Cl^-	< 250	250	108	67	69.4

No	Measuring Parameters	Unit	Testing Method	SEQs Limits	WHO / WBG	Spot 01	Spot 02	Spot 03
15	Chromium (Cr)	mg/l	APHA 3500-CrB	< 0.05	0.05	0.032	ND	0.021
16	Copper (Cu)	mg/l	Test Kit Method	2	2	0.74	ND	0.61
17	Cyanide (Cn)	mg/l	APHA 4500 CN	<0.05	0.07	ND	ND	0.013
18	Fluoride (F)	mg/l	APHA 4500 F ¯	< 1.5	1.5	0.8	0.75	0.61
19	Lead (Pb)	mg/l	APHA 3500 Pb B	< 0.05	0.01	0.01	ND	ND
20	Manganese (Mn)	mg/l	APHA 3500 MnB	< 0.5	0.5	0.34	ND	0.29
21	Mercury (Hg)	mg/l	Test Kit Method	< 0.001	0.001	ND	ND	ND
22	Nickel (Ni)	mg/l	APHA 3500 Ni	< 0.02	0.02	0.01	ND	0.009
23	Nitrate (NO3)	mg/l	Test Kit Method	< 0.50	50	ND	0.25	ND
24	Nitrite (NO2)	mg/l	Test Kit Method	< 3	3	ND	0.63	ND
25	Selenium (Se)	mg/l	APHA 3500 Se	0.01	0.01	ND	ND	ND
26	Residual Chlorine	mg/l	Test Kit Method	0.2 - 1.5	-	0.25	0.265	0.29
27	Zinc (ZN)	mg/l	APHA 3500 Zn	5	3	2	0.065	2
28	Fecal Coliforms	Count / ml	APHA 922 B	0 Per 100 ml	0 Per 100 ml	2	35	2
29	E Coli	Count/ml	Total Viable Count	0 Per 100 ml	0 Per 100 ml	2	24	1
30	Total Bacterial Count	Count / ml	APHA 922 B	0 Per 100 ml	0 Per 100 ml	4	55	3
31	Pesticides	mg/L	Kit Method	0.001	-	ND	ND	ND

Sensitive Receptors in the Project Area

A survey of all selected Katchi Abadis was conducted to identify sensitive receptors such as Educational Institutes, Religious sites, Health facilities and Recreational facilities located near the construction areas. 191 sensitive receptor locations have been identified during the survey. Complete details of sensitive receptors with locations and maps are provided in **Table A4-5** and **Figure A4-2**.

Table A4-5: Potential Sensitive Receptors in the Project Area

No.	Latitude	Longitude	Category	Sensitive Receptor
1. Zia Colony				
1	24.83493	67.12354	School	The Iqra Academy
2	24.83437	67.12328	School	Hope School
3	24.83375	67.12537	Church	Grace of Christ Church
4	24.83390	67.12375	School	Junaid Public school
5	24.83478	67.12398	Hospital	Hope General Hospital
6	24.83267	67.12605	Church	Universal Gospel church
7	24.83384	67.12472	Church	Saviour Global Church
8	24.83342	67.12564	Coaching Centre	Good News Coaching centre
9	24.83387	67.12375	School	Iqra Anees ul Atfal High School
10	24.83419	67.12462	Church	ST Philips church
11	24.83276	67.12586	Mosque	Masjid e Abrar
12	24.83309	67.12536	Church	Aim of God Church
13	24.83267	67.12551	Church	ST Monica Catholic Church
14	24.83505	67.12334	Mosque	Jamia Masjid Abu Ayyub Ansari
15	24.83279	67.12548	Church	Seventh day Adventist church
16	24.83465	67.12453	Church	Philadelphia Pentecostal Church
17	24.83247	67.12567	Association	Gethsemane Pentecostal Assemblies Association
18	24.83326	67.12554	Church	Koh e Horab church

No.	Latitude	Longitude	Category	Sensitive Receptor
19	24.83437	67.12453	Church	Holy Vision church
20	24.83566	67.12545	School	Mumtaz Academy
21	24.83502	67.12486	Mosque	Jamia Masjid Usmania
2. Muhammadi Colony				
1	24°53'42	67°12'84	Mosque	Muhammadi Eid Gaha
2	24°53'42	67°12'88	Mosque	Muhammadi Mosque
3	24°50'21	67°10'24	Mosque	Jamia Masjid Bilal
4	24°53'34	67°12'11	Academy	The Desire Academy
5	24°53'42	67°12'10	Mosque	Jamia Masjid
6	24°53'46	67°12'57	School	Iqra Secondary School/Madarsa
7	24°53'40	67°12'13	Mosque	Jamia Masjid Qadri
8	24°53'42	67°12'84	School	Government Boys Primary school
3. Ali Muhammad Goth				
1	24°58'18	67°4'45	Mosque	Jamia Mosque Khizra
2	24°58'9	67°4'49	School	Govt Mathew High School
3	24°58'14	67°4'40	Mosque	Jamia Mosque Al Madina
4	24°58'9	67°4'47	Mosque	Madrsatul Madina
5	24°58'10	67°4'43	Mosque	Jamia Masjid Dar e Madina Chand
6	24°58'14	67°4'41	Madressa	Shaheedia Ahsan-ul- Quran
7	24°58'9	67°4'43	Sharaine	Hazart Baba Ghulam Rasool
4. Sharif Colony				
1	24°50'25	67°10'15	Mosque	Mosque
2	24°50'23	67°10'11	School	Siraj Academy School
3	24°50'24	67°10'11	School	Rabnawaz School
4	24°50'24	67°10'12	Hospital	Jinnah medical college hospital
5	24°50'26	67°10'11	School	Government Boys school
6	24°50'27	67°10'10	Office	Union committee
7	24°50'28	67°10'23	Mosque	Jamia mosque Madni
8	24°50'15	67°10'11	School	Superior English Academy
9	24°50'21	67°10'24	Mosque	Jamia Masjid Qadri
10	24°50'21	67°10'22	Mosque	Jamia Masjid Allah Wali
11	24°50'15	67°10'11	School	Basic Education Community School
12	24°50'15	67°10'11	Mosque	Jamia Masjid Noorani
5. Future Colony				
1	24°51'20.27	67°12'6.85	School	The Ideal Montessori Secondary School
2	24°51'20.46	67°12'7.16	School	Zahid Kids School
3	24°51'25.31	67°12'13.28	Church	St. Saviour's Church Of Pakistan
4	24°51'24.54	67°12'12.40	Church	Catholic Church
5	24°51'24.29	67°12'13.87	Church	Up Church
6	24°51'23.55	67°12'12.23	Church	Bethany Church
7	24°51'23.75	67°12'11.16	School	Government Primary School
8	24°51'23.30	67°12'10.90	Medical Centre	Iqbal Medical Centre
9	24°51'22.22	67°12'9.06	Madarsa	Madarsa Jamia Abu Akshay Taleem Al Quran
10	24°51'20.98	67°12'5.57	School	Oxford Grammar School
11	24°51'18.62	67°12'0.31	Mosque	Jamia Madina Masjid
12	24°51'21.29	67°12'4.70	Health	Dr Noor Ud Din Medical Centre
13	24°51'21.62	67°12'5.57	Imam Bargha	Shaheed e Karbala Imam Bargha

No.	Latitude	Longitude	Category	Sensitive Receptor
14	24°51'25.57	67°12'9.90	Mosque	Noorani Masjid
15	24°51'27.83	67°12'11.14	Mosque	Jamia Masjid Muhammadi
16	24°51'27.83	67°12'11.14	Mosque	Jamia Masjid Muhammadi
17	24°51'29.99	67°12'11.70	Madarsa	Madarsa Riaz Ul Janat
18	24°51'26.03	67°12'3.04	School	Prince Harry English Academy
19	24°51'29.88	67°12'5.94	Mosque	Jamia Masjid Farooqia
20	24°51'27.60	67°12'0.86	Mosque	Jamia Masjid Future Colony
21	24°51'24.52	67°11'58.74	Madarsa	Al Khidmat Tul Quran
22	24°51'23.70	67°11'57.37	Coaching Centre	Mehboob computer institute coaching center
23	24°51'23.52	67°11'53.73	Eid Gah	Eid Gah Ground
24	24°51'28.79	67°11'59.05	School	Roshan Model School System
25	24°51'32.66	67°11'4.62	School	Adeel Kids academy
26	24°51'33.41	67°12'5.99	Mosque	Jamia Masjid Subhani Pakistani Tentry
27	24°51'32.35	67°12'13.91	Mosque	Jamia Masjid Umar Bin Khattab
28	24°51'27.61	67°11'59.45	Clinic	Rashid Medical Centre
29	24°51'31.15	67°12'55.54	School	Government Girls &boys Primary and secondary school
30	24°51'41.39	67°12'5.58	Park	Park
31	24°51'35.89	67°12'4.98	Graveyard	Graveyard
6. Mujahid Colony				
1	24°55'11	67°02'28	Church	St. Louisa Chruch
2	24°55'20	67°1'57	Mosque	Jamia Masjid Sayyeda Ayesha Siddiqa
3	24°55'14	67°2'6	Mosque	Barhi Madina Masjid
4	24°55'12	67°2'15	School	Idarha AL QURAAN Haffaz Islamic School
5	24°55'11	67°2'16	Mosque	Dar ul Fatawa Al Irshad
6	24°55'11	67°2'16	School	jamia Memoona Lilbinat
7	24°55'8	67°2'28	Park	Farooq e Azam Park
8	24°55'11	67°2'20	Mosque	Jamia Masjid Madina
9	24°55'16	67°2'3	Madarsa	Madarsa Tarteel ul Quraan
10	24°55'18	67°1'58	Madarsa	Madarsa Taleem ul Quraan
11	24°55'18	67°1'56	Clinic	Medi Aid Clinic
7. Quaid-e-Azam Colony				
1	24°56'26.71	67°5'39.43	School	baithak school network society for educational welfare register
2	24°56'26.71	67°5'39.43	Mosque	Jamia Masjid Mustafa
3	24°56'21.05	67°5'37.71	Mosque	Jamia masjid Madaris ul Rabia
4	24°56'19.57	67°5'36.47	School	The Little Pearl Academy
5	24°56'15.41	67°5'34.37	School	Govt. Boys Secondary School
6	24°56'20.25	67°5'33.41	Mosque	Jamia Masjid Kulsoom
7	24°56'20.61	67°5'29.96	Madaris	Madaris usman Bin Affan
8	24°56'18.57	67°5'30.04	Mosque	Jamia Masjid Al Shamas
9	24°56'17.89	67°5'29.90	School	Idara sibghat Ul Quran Islamic School
10	24°56'16.25	67°5'30.91	Mosque	Jamia Masjid Al Rahman
11	24°56'13.28	67°5'31.04	Mosque	Jamia Masjid Noor
12	24°56'10.79	67°5'33.15	School	City Montessori School
13	24°56'10.50	67°5'33.28	School	Kids Foundation School
14	24°56'10.40	67°5'29.91	Mosque	Jamia Masjid Muhammadi
15	24°56'16.47	67°5'32.78	Hospital	Umeed e millat welfare clinic

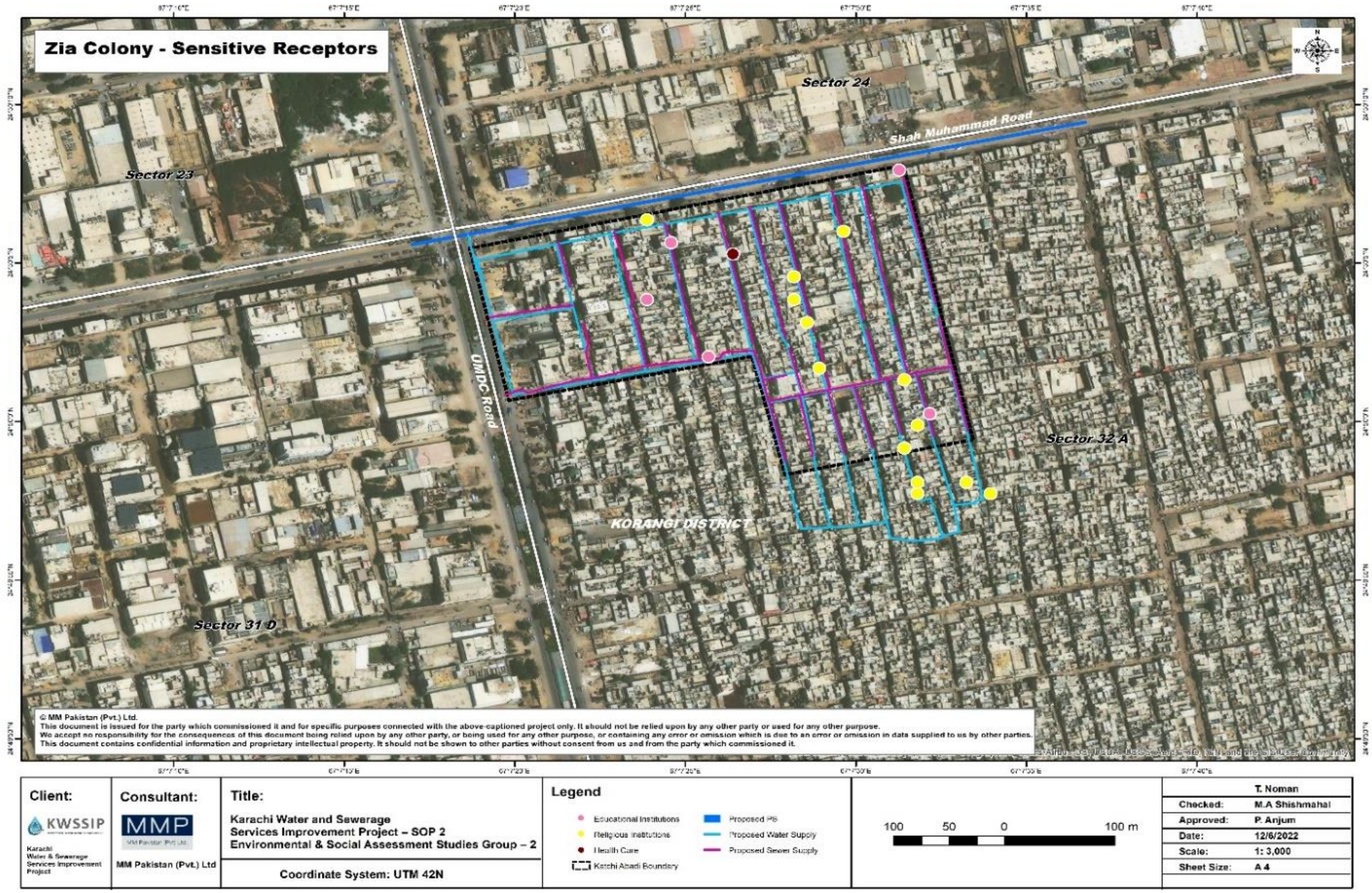
No.	Latitude	Longitude	Category	Sensitive Receptor
8. Sherpao Colony				
1	24°50'12.25	67°12'43.76	Calinic	Al Shifa health Clinic
2	24°50'14.76	67°12'44.21	Mosque	Jamia Masjid Bait-ul- Mukaram
3	24°50'16.84	67°12'42.38	School	Al Usman Academy
4	24°50'13.10	67°12'38.88	Mosque	Jamia Masjid Ali-ul- Murtaza
5	24°50'12.59	67°12'40.71	Calinic	Bushera maternity and ultera sound care
6	24°50'11.14	67°12'37.92	Mosque	Jamia Masjid Rehmania
7	24°50'7.071	67°12'35.41	Mosque	Jamia Masjid Umer bin Khitab
8	24°50'10.99	67°12'25.62	School	Jehan Schooling System
9	24°50'10.98	67°12'33.42	Mosque	Jamia Masjid Siddiq Akbar
10	24°50'15.40	67°12'33.47	Mosque	Eid Gaha
11	24°50'9.98	67°12'32.46	Mosque	Jamia Masjid Bismiallah
12	24°50'8.76	67°12'32.31	Mosque	Madrissa Dar-ul- Quraan Haqaniyia
13	24°50'11.99	67°12'29.99	School	Suffa Grammer School
14	24°50'9.25	67°12'23.24	Mosque	Jamia Masjid Muhammadi
15	24°50'14.78	67°12'23.29	School	Mumtaz Public School
9. Bilalabad Colony				
1	24°57'10.46	67°2'30.67	School	The BLC School
2	24°57'12.37	67°2'30.54	Mosque	Jamia Masjid Muhammadi
3	24°57'13.07	67°2'32.41	Madrissa	Jamia Dar-ul- Sulmania Qadria
4	24°57'16.72	67°2'35.97	Mosque	Jamia Faizzan Attar
5	24°57'17.88	67°2'36.22	Madrissa	Ayesha-Tul-Nissa o Binnayat
6	24°57'5.31	67°2'27.83	Clinic	Doctor Tajumal Clinic
7	24°57'7.63	67°2'27.35	Health Care Centre	Col.Jamshed Tareen Primary mother and child health
8	24°57'14.00	67°2'25.43	Mosque	Jamia Masjid Sahra
10. Muslimabad Colony				
1	24.82917	67.21532	Hospital	Emaan Medical Centre
2	24.83233	67.21502	Dispensary	Govt Dispensary at star ground
3	24.83239	67.21560	Mosque	Jamia Masjid Qadria Hannania
4	24.83836	67.22329	Madarsa	Madarsa Ashaat ul Quraan
5	24.83315	67.21655	Mosque	Jamia Masjid Bilal
6	24.83368	67.21634	School	The Fast Academy
7	24.83370	67.21634	School	Iqra Al Rehman Academy
8	24.83942	67.22268	Madarsa	Madarsa Jamia Iqra Al Quraan
9	67.84047	67.22299	Park	Umar bin Khitab
10	24.83044	67.83044	Mosque	Jamia Masjid Bait Ullah Shabo
11	24.82800	67.21529	Mosque	Jamia Masjid Khulfa e Rashidin
12	-	-	School	O Brooks Schooling System
13	24.82964	67.21543	mosque	Jamia Masjid Allah Wali
14	24.83728	67.22565	School	Zia ul Islam public model high school
15	24.83356	67.21775	School	Govt school (Closed)
16	-	-	Mosque	Jamia Masjid Dar ul Islam
17	-	-	School	Riaz us Sualeheen
18	-	-	Mosque	Jamia Masjid Allah Wali
19	24.84174	67.22441	Mosque	Jamia Masjid Noorani
20	24.83697	67.22522	Mosque	Jamia Masjid Aqsa
21	24.83372	67.21838	Eid gah	Noorani Eidgah

No.	Latitude	Longitude	Category	Sensitive Receptor
22	24.83311	67.21772	Mosque & Madarsa	Jamia Masjid Noor e Mustafa
23	24.83885	67.22403	Madarsa	Madarsa Tafheem ul Quraan Lilbinat
24	24.84125	67.22509	School	Iqra Imam Mohammad Islamia Secondary School
25	24.84069	67.22493	Hospital	Subhan Welfare Clinic & Meternity Home
26	24.84069	67.22493	Madarsa	Madarsa Haqqania Taleem ul Quraan
27	24.84054	67.22460	Madarsa	Jamia Siddiqia
28	24.84017	67.22497	Clinic	H.Rehman Clinic
29	24.84096	67.22498	Clinic	Tahir Clinic
30	24.84089	67.22570	Clinic	Mawillah Clinic
31	24.84022	67.22500	Clinic	Suhail Medical Centre
32	24.83931	67.22576	Mosque	Jamia Masjid Ansari
33	24.83722	67.22507	Madarsa	Madarsa Aisha Lilbinat
34	24.83709	67.22543	Mosque	Jamia Masjid Abu Bakar Siddique
35	24.83699	67.22560	School	Iqra Zeenat ul Quraan
36	24.83853	67.22638	Clinic	Saleem Maternity Home
37	24.83728	67.22565	School	Public Model High School
38	24.83953	67.22758	Mosque	Allah Wali Masjid
39	24.83952	67.22759	Madarsa	Madarsa Jamia Islamia
40	24.84040	67.22734	School	Mengal islamia Secondary School
41	24.83929	67.22833	School	H.M.S Public Secondary School
42	24.83884	67.22783	Madarsa	Madarsa Ashab Suffa
43	24.83769	67.22786	Hospital	Habib Welfare Medical Center
44	24.83643	67.22912	Hospital	Al Mustafa Medical Center
45	24.83460	67.22846	Mosque	Jamia Masjid Rahmania
46	24.83463	67.22928	Madarsa	Madarsa Aisha Lilbinat
47	24.83480	67.22981	School	Karachi Kids University School
48	24.83526	67.23010	Hospital	Ibn e Sina Mother Child Care Center
49	24.83526	67.23010	Clinic	Mariyam Maternity Home
50	24.83453	67.22811	Mosque	Jamia Masjid siddiqui Akbar
51	24.83274	67.22627	School	ALI English High School
52	24.83308	67.22667	Clinic	Government dispensary
53	24.83359	67.22653	Mosque	Jamia Masjid Noor Muhammad
54	24.83313	67.22650	School	I.A.K Education Academy
55	24.83085	67.22862	Mosque	Jamia Masjid Abu Darda
56	24.83580	67.23020	Hospital	Ahmed Welfare Medical Center & Maternity Home
57	24.83779	67.22921	Mosque & Madarsa	Madina Jamia Masjid & Madarsa
58	24.83948	67.22919	Mosque & Madarsa	Jamia Masjid Siddique & Madarsa
59	24.83106	67.22674	Mosque	Jamia Masjid Ameer Hamza
60	24.83785	67.22669	Mosque	Jamia Masjid Abu Bakar Siddique
61	24.83485	67.22435	Mosque	Jamia Hazrat Bilal Masjid
62	24.83597	67.22361	Mosque & Madarsa	Jamia Masjid Quba & Madarsa Rozatul Islam
63	24.83567	67.22749	Mosque	Jamia Masjid Hamza

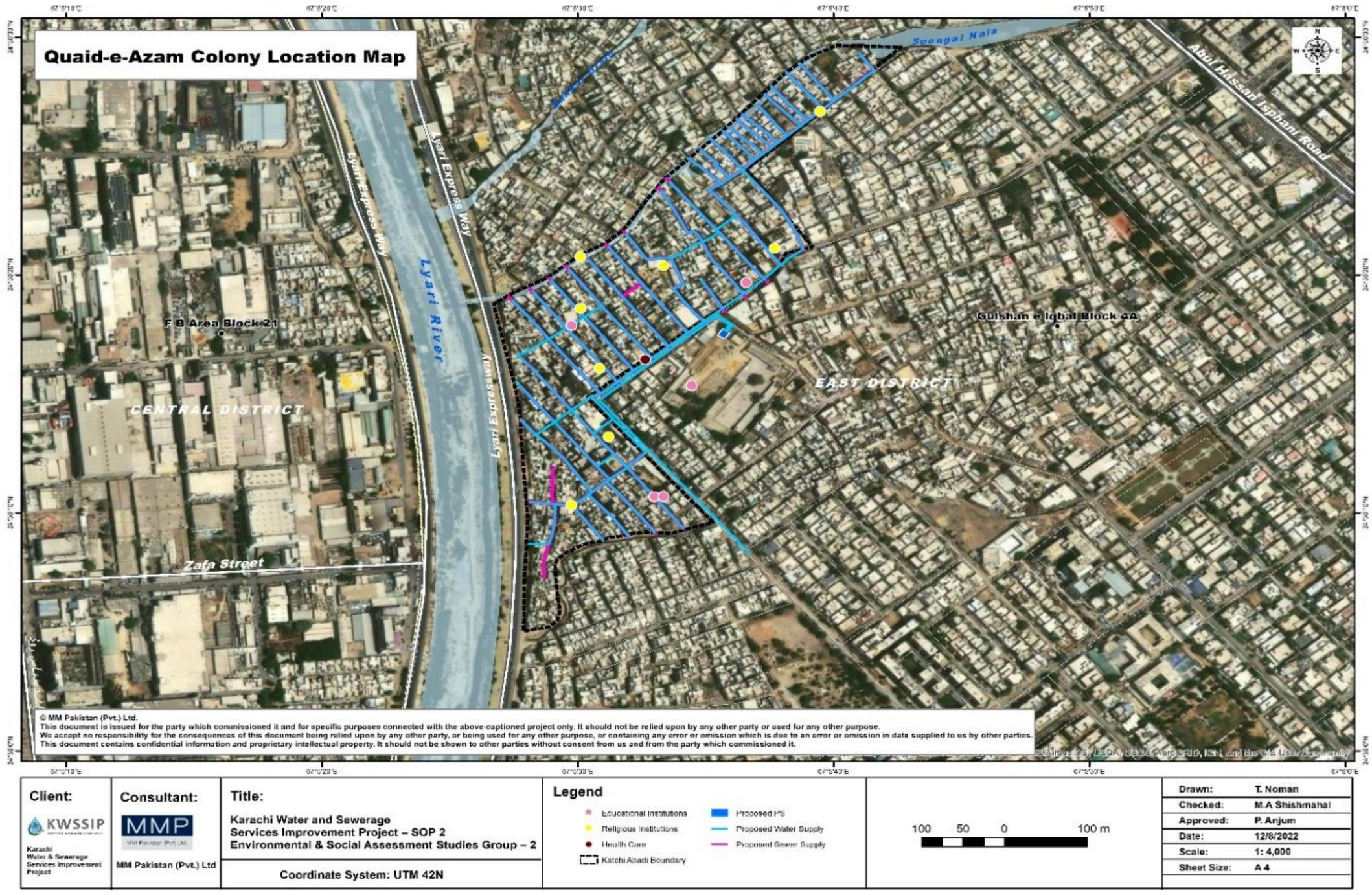
Maps of the Sensitive Receptors

Figure A4-2: Location Map of Sensitive Receptors

1- Zia Colony

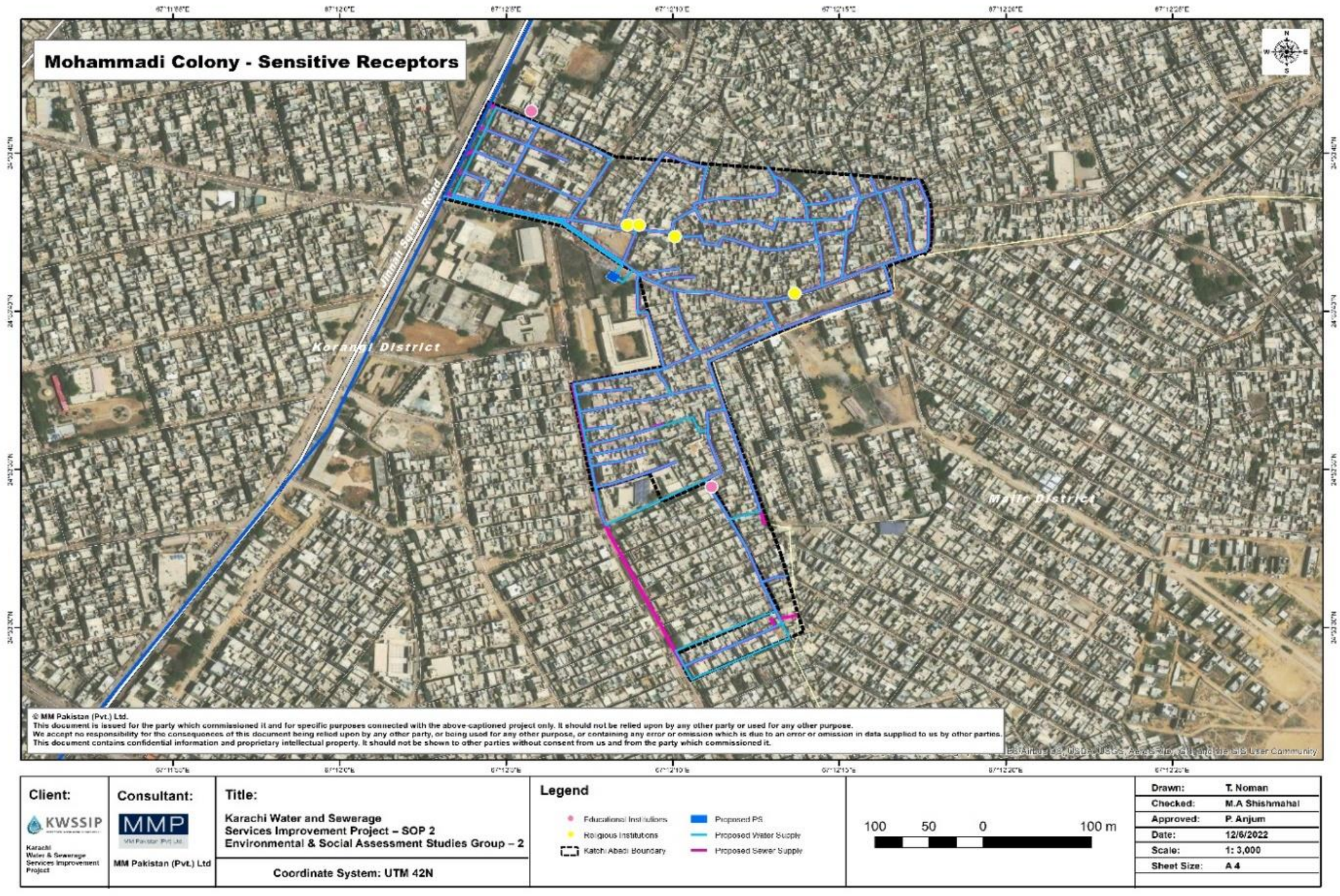


2- Quaid-e- Azam Colony

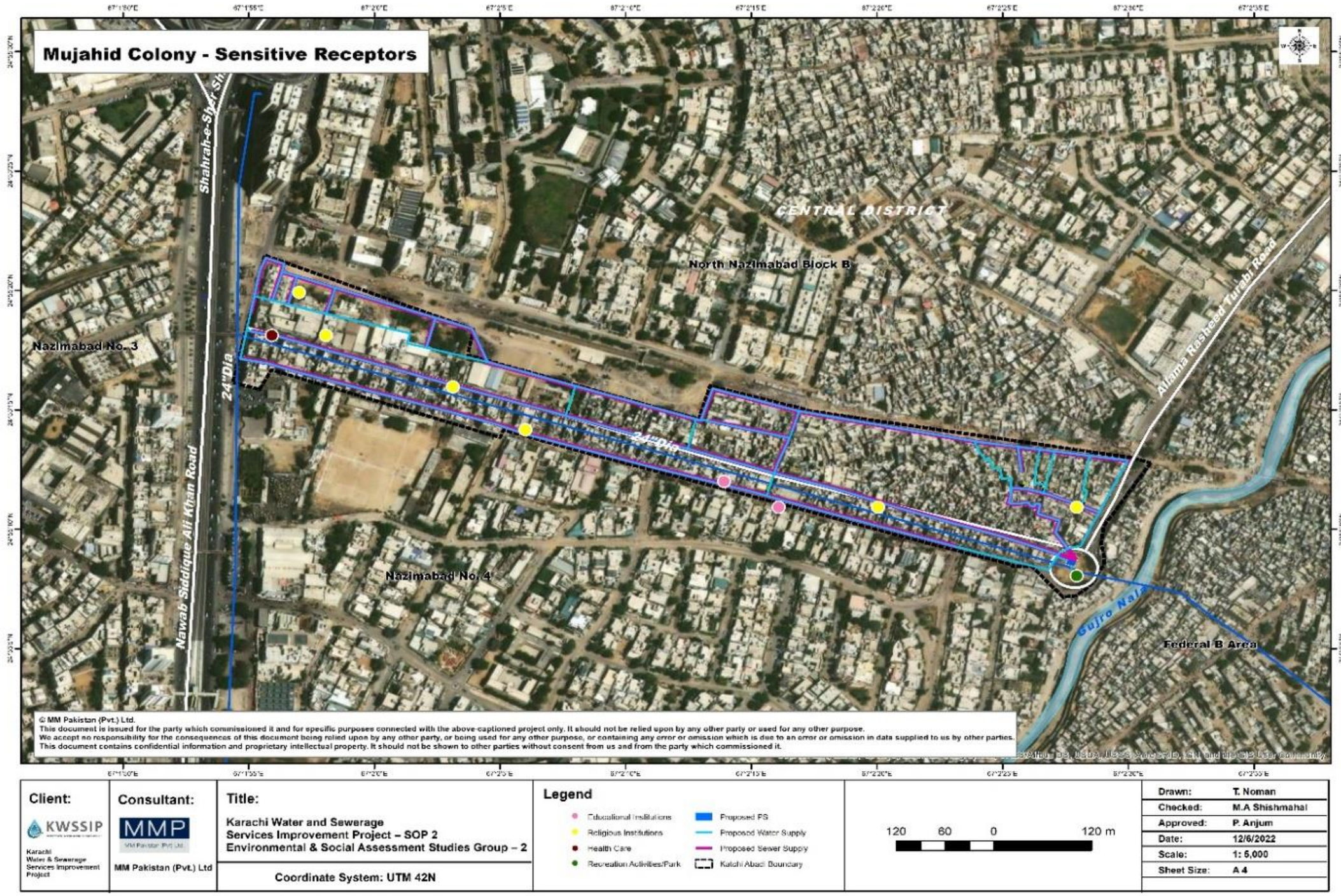


3- Ali Muhammad Goth

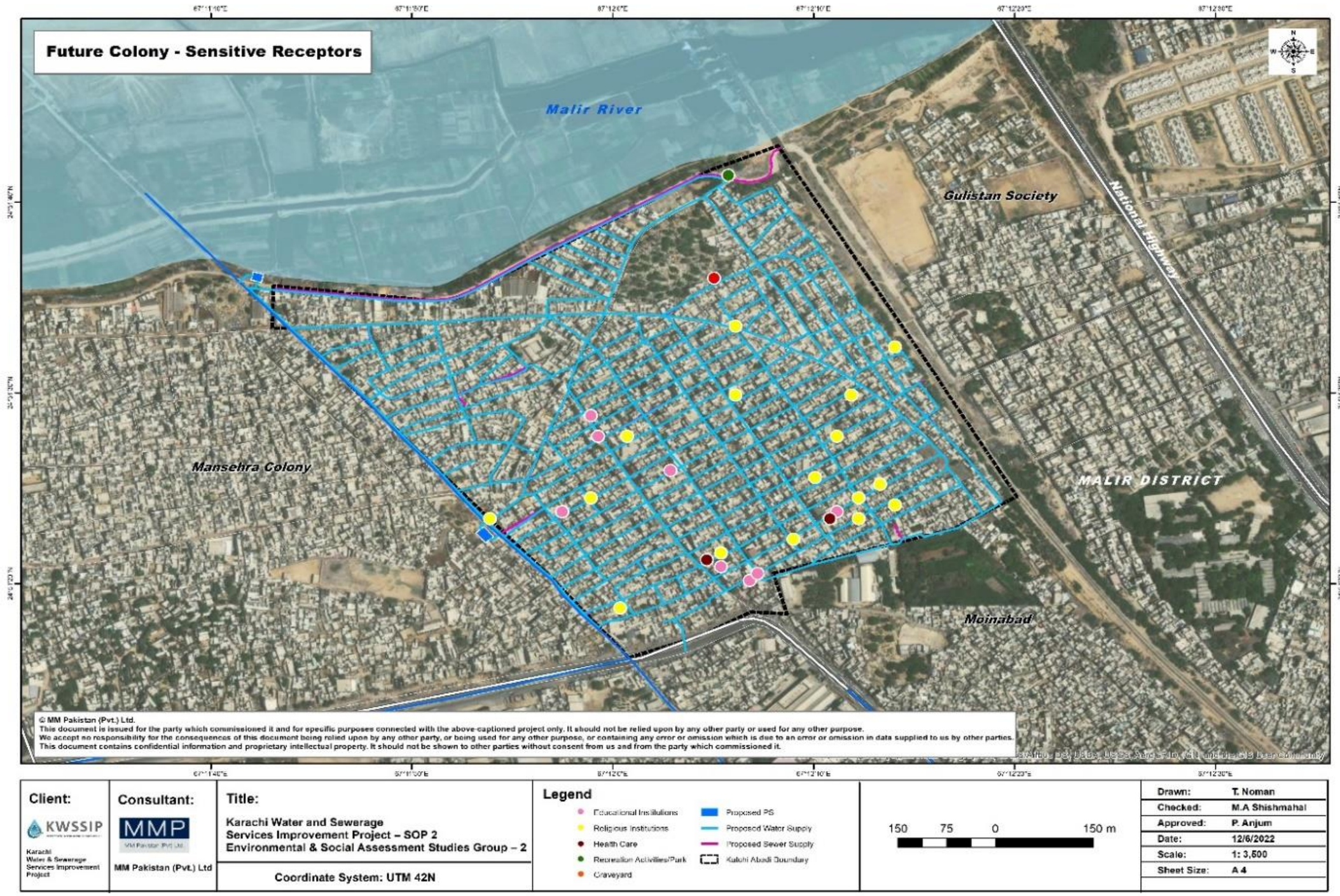
4- Mohammadi Colony



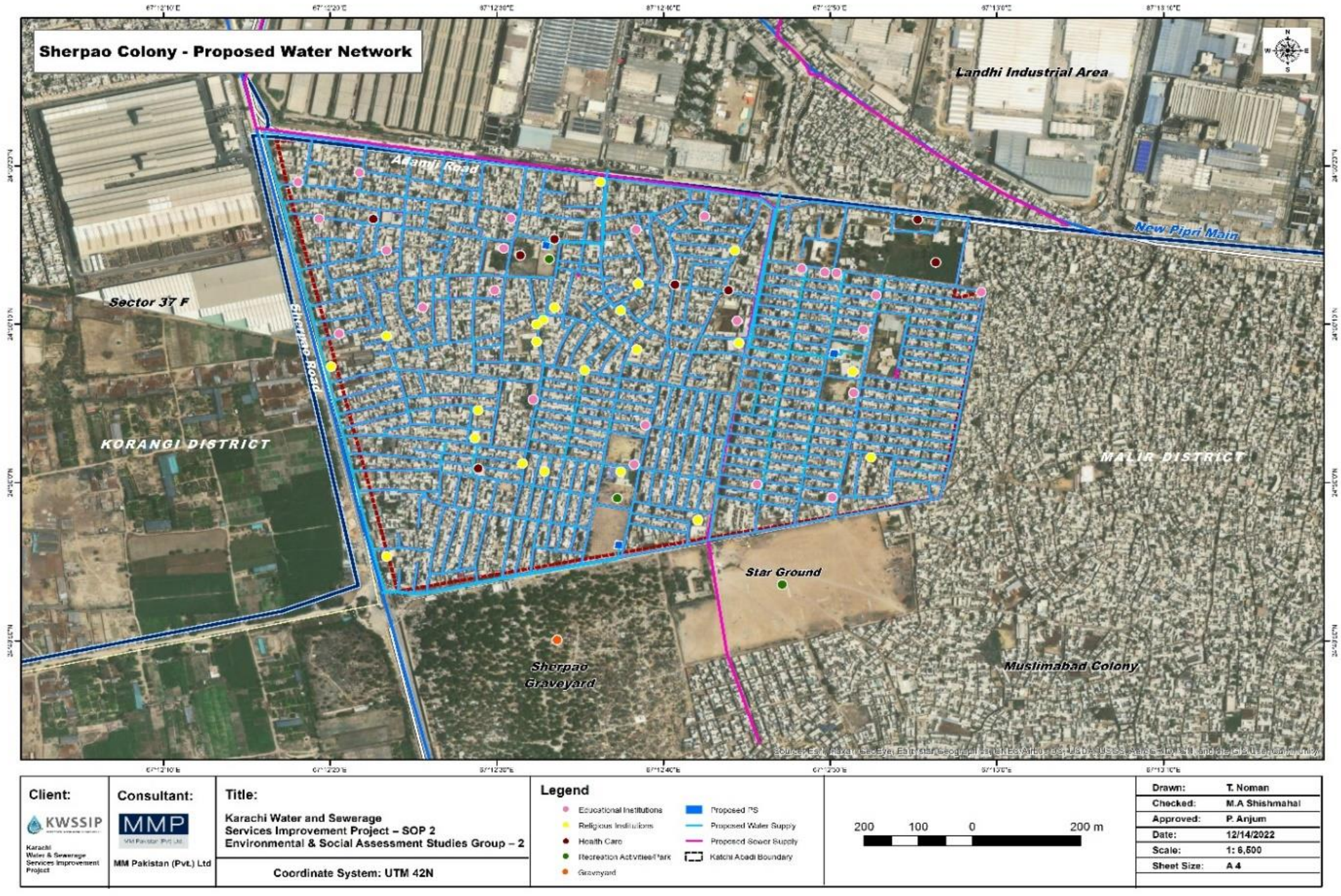
5- Mujahid Colony



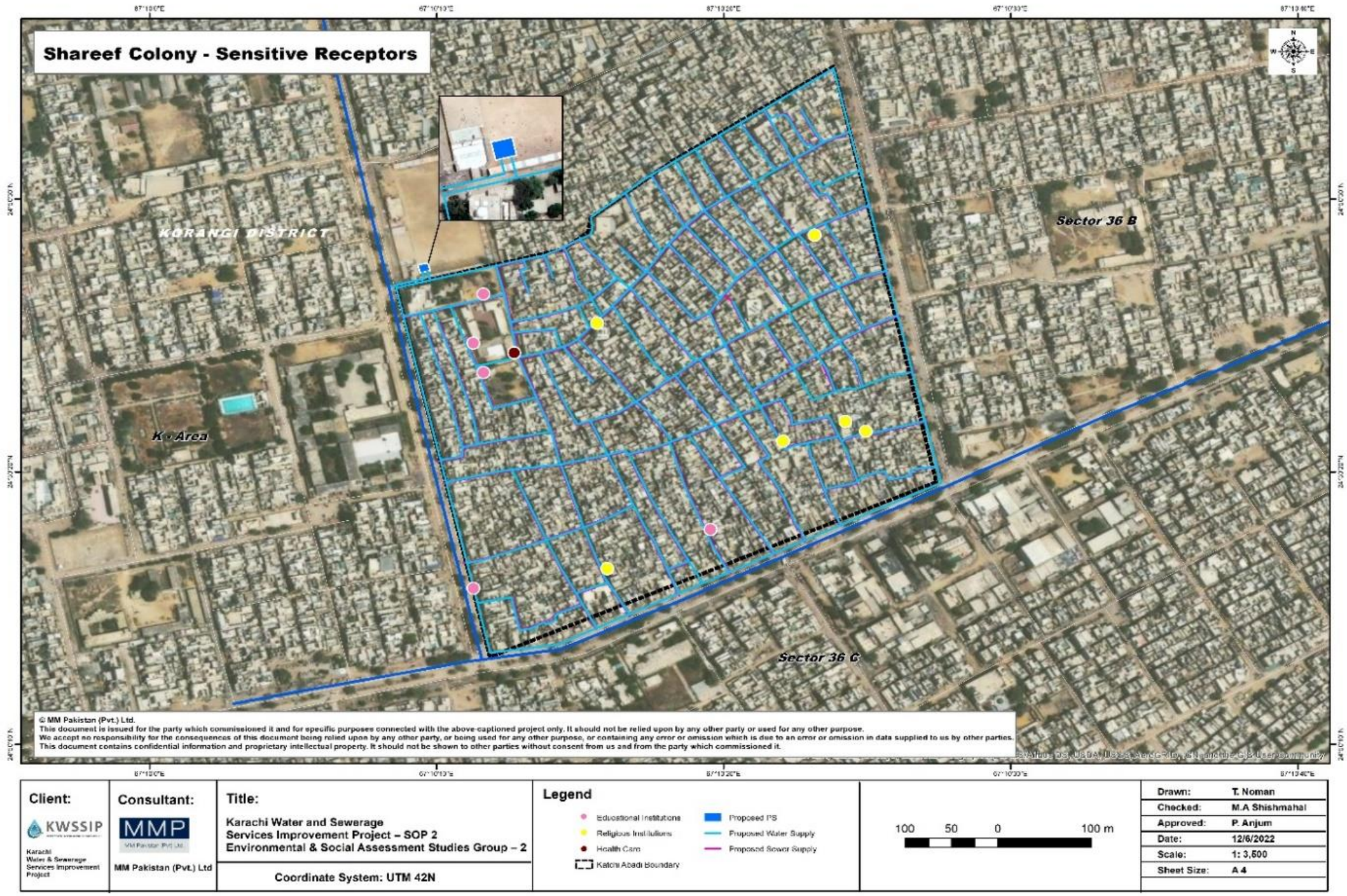
6- Future Colony



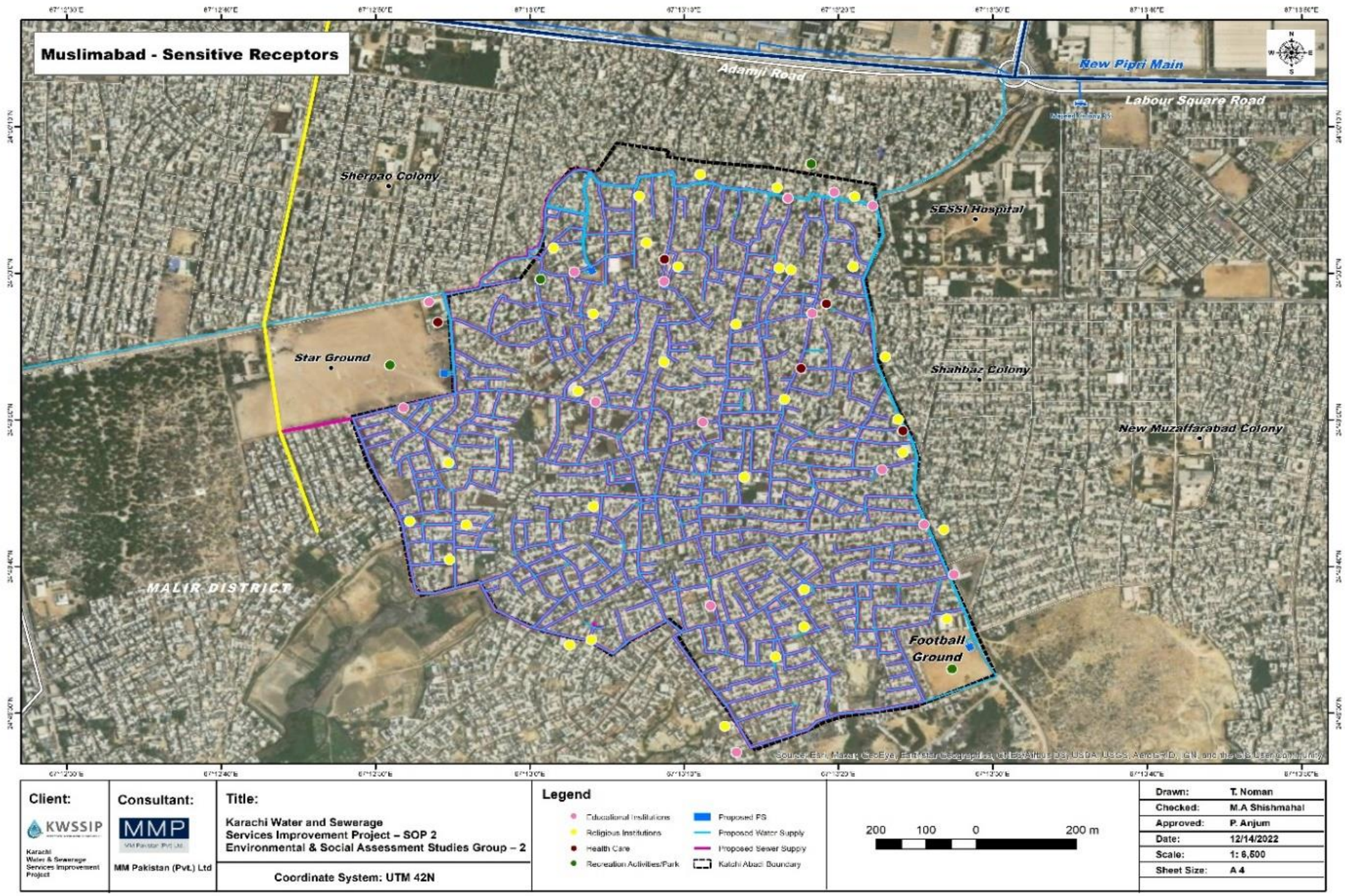
7- Sherpao Colony



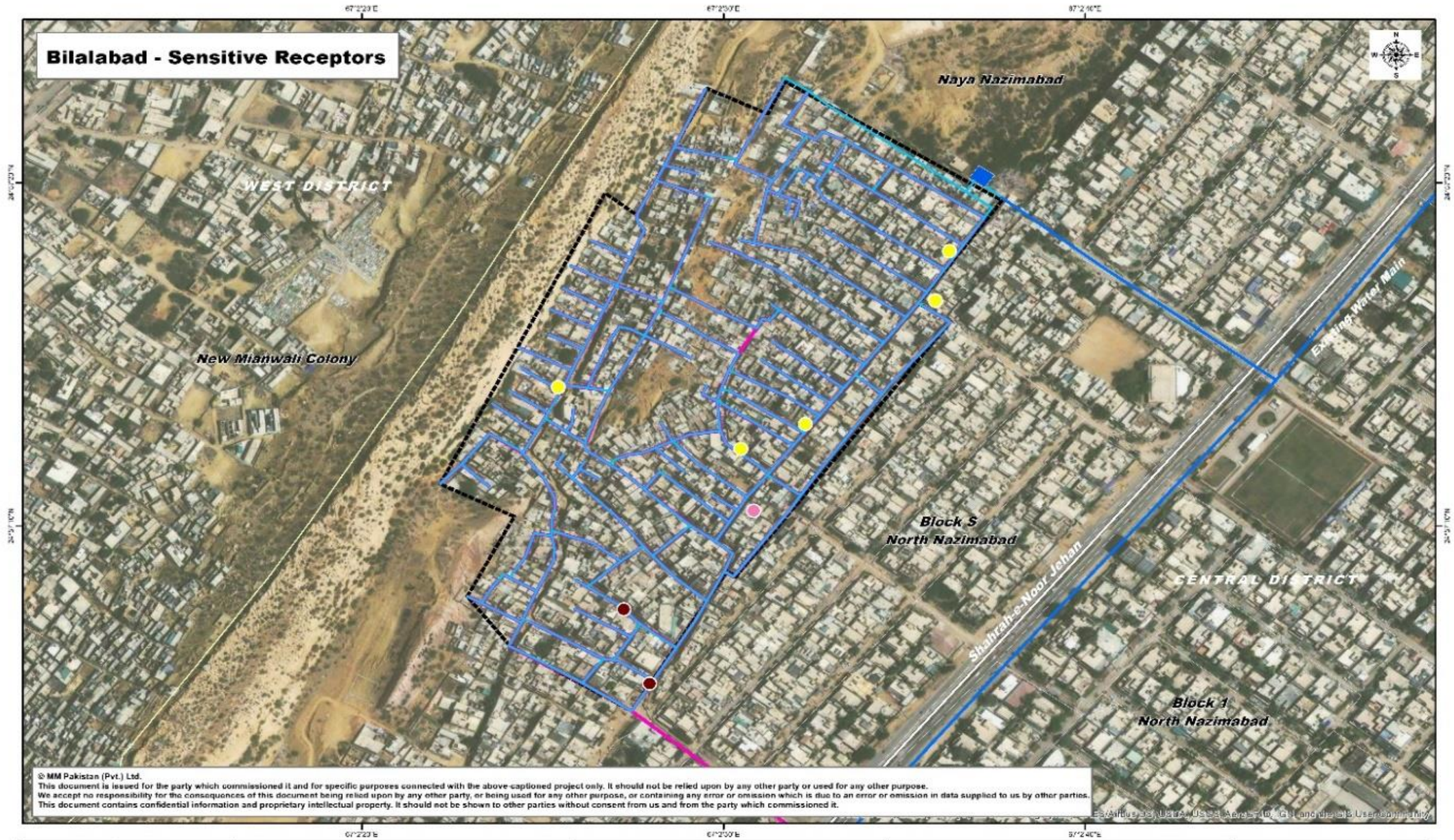
8- Sharif Colony



9- Muslimabad Colony



10- Bilalabad Colony



Ecological Environment

Flora

The project intervention areas in the selected Katchi Abadis mainly comprised of narrow and populated streets having no vegetation at the centre or sides of the streets. Therefore, the works will not involve clearance of vegetation or cutting of trees. Vegetation outside the AoI are provided in **Table A4-6**.

Table A4-6: Vegetation Growing outside the AoI

No.	Species	Common Name	IUCN Status
Trees			
1.	*Azadarichta indica*	Neem tree	LC
2.	*Cocos nucifera*	Coconut	NE
3.	*Conocarpus lancifolius*	Damas	LC
4.	*Cordia myxa*	Lesora	LC
5.	*Corymbia citriodora*	Lemon scented tree/safeeda	LC
6.	*Melia azedarach*	Bakain	LC
7.	*Parkensonia aculeate*	Palo Verde	LC
8.	*Phoenix dactylifera*	Khajoor	LC
9.	*Pithecellobium dulce*	Jungle jalebi	LC
10.	*Prosopis glandulosa*	Honey Mesquite	LC
11.	*Acacia nilotica*	Kikar	LC
Shrubs			
1.	*Abutilon indicum*	Kanghai	NE
2.	*Arthrocnemum indicum*	(Saltwort),	NE
3.	*Calotropis procera*	Akk	NE
4.	*Datura alba*	Tooh	NE
5.	*Prosopis juliflora*	Keekar	NE
6.	*Ricinus communis*	Castor bean	NE
7.	*Salvadoa persica*	Khabar	LC
8.	*Solanum albicaule*	Bittersweet	NME
9.	*Tamarix aphylla*	Lai	NE
10.	*Withania coagulans*	Indian rennet	NE
11.	Ziziphus nummularia	Jungli Beer	NE
NE=NOT EVALUATED, LC= LEAST CONCERN, DD= DATA DEFICIENT, NT= NEAR THREATENED, EN= ENDANGERED, CR= CRITICALLY ENDANGERED			

Fauna

Likewise other tightly populated areas of Karachi, the common fauna found in the selected Katchi Abadis includes stray cats (*Felis catus*), stray dogs, House Shrew (*Suncus murinus*), House Rat (*Rattus rattus*) and common birds such as Black Kite (*Milvus migrans*), Blue Rock Pigeon (*Columba livia*), House Crow (*Corvus splendens*), House Sparrow (*Passer domesticus*) and Indian Myna/Common Myna (*Acridotheres tristis*). No disturbance to fauna is expected due to construction activities.

Social and Socioeconomic Baseline

This section presents the socioeconomic baseline based on data collected through rounds of public consultation conducted for the ESMP. The 10 selected Katchi Abadis are low-income settlements that are located in different locations of Karachi city. These include Zia Colony, Mohammadi Colony D/D1, Ali Mohammad Goth, Future Colony, Mujahid Colony, Quid-e-Azam Colony, Sherpao, Sharif Colony, Bilalabad, and Muslimabad D/D1.

Sample Size

Socio–economic baseline of the project area has been established by utilizing both primary and secondary data sources. In addition, baseline was strengthened by sample-based socio-economic survey conducted within the project area. The project area of the proposed project falls in Korangi, Central A, Malir, Central B, East B and Central Districts of Karachi. Population numbers were taken from the project's feasibility report[11]. Since no data was available for actual households for each Katchi Abadi, a random reconnaissance survey was carried out at each Katchi Abadi to have consultations with five to ten residents for getting an idea of average household size in each Katchi Abadi. Based on the details provided by the consulted residents, sample size for each Katchi Abadi was calculated which is given in **Table A4-7**. On average, households in Katchi Abadis were composed of two to three stories, with seven persons living at each story. A total of **181** respondents have been consulted for establishing socio-economic baseline, out of them, **108** were males and **73** were females. At the surveyed Katchi Abadis, most of the population lives in close and joint families, mainly because of poverty, close family relations etc.

Table A4-7: Distribution of Sample among Katchi Abadis

No	Katchi Abadi Name	District	Population	Average Households	Sample size
1.	Zia Colony	Korangi	15,078	1,077	14
2.	Quaid-e-Azam Colony	East	21,590	1,028	21
3.	Ali Mohammad Goth	Central	17,953	816	22
4.	Mohammadi Colony D/D1	Korangi	16,912	939	18
5.	Mujahid Colony	Central	25,592	2,132	12
6.	Future Colony	Malir	106,574	9,688	11
7.	Sherpao Colony	Malir	336,218	18,678	18
8.	Sharif Colony	Korangi	111,096	5,847	19
9.	Muslimabad	Malir	240,389	10,016	24
10.	Bilalabad	Central	21,697	986	22

Socioeconomic data was collected through questionnaire in **Figure A4-3** and also with the help of secondary sources.

[11] Feasibility Study Report of September 2022 by SUNJIN Engineering & Architecture Co. Ltd. and Euro Consult Pakistan (Pvt.) Ltd. (JV)

Figure A4-3: Social Questionnaire

KWSSIP
Karachi Water & Sewerage Services Improvement Project

MMP
MM Pakistan (Pvt) Ltd.

Questionnaire for Institutional Consultation

Name of department _____ **District** _____

Name of consulted representative _____**Designation** _____

Health

Health facilities	Total Numbers in district
District Hospitals	
BHU	
RHC	
MCH	

What major water brown disease are observed in the district?

_____
_____
_____
_____

What measures are taken by the health department/Ministry to overcome these diseases?

_____
_____
_____
_____

What would be the social or environment impacts on peoples by the implementation of this project?

1. _____
2. _____
3. _____

How your institution can help to this project for increasing its efficacy for the public interest

1. _____
2. _____
3. _____

Name of interviewer _____ **Date** _____ **Designation** _____

Name of interviewer _____ **Date** _____ **Designation** _____

Questionnaire for Institutional Consultation

Name of department _____ **District** _____

Name of consulted representative _____**Designation** _____

Education

Total no of primary schools in district	Girls	Boys
Estimated enrollment		
School having washroom facilities		
Schools having drinking water facilities		

What kind of problems you are facing with current sewerage system /how it is effecting to the enrollment in schools

_____
_____
_____
_____

Through this project implementation, how it would benefit you/education department

_____
_____
_____
_____

Any campaigns are runned by education department or any other institution on health and hygiene if yes what was the campaigns?

_____
_____
_____
_____

Any suggestions

_____
_____
_____
_____

Name of interviewer _____ **Date** _____ **Designation** _____

Name of interviewer _____ **Date** _____ **Designation** _____

Questionnaire for Institutional Consultation

Name of department _____ **District** _____

Name of consulted representative _____**Designation** _____

Fisheries

What are the effects/problems facing the fisherman's due to untreated sewer water wasted in marine

_____
_____
_____
_____

What kind of water born disease are they facing?

_____
_____
_____
_____

What kind of skin disease they are facing due to direct exposure to marine water?

_____
_____
_____
_____

How this project will impact on fisherman's community?

_____
_____
_____
_____

What are your suggestions?

_____
_____
_____
_____

Name of interviewer _____ **Date** _____ **Designation** _____

Name of interviewer _____ **Date** _____ **Designation** _____

Questionnaire for Institutional Consultation

Name of department _____ **District** _____

Name of consulted representative _____ **Designation** _____

Agriculture

The vegetables cultivated on waste water are good enough for health ❑ Yes ❑ No

If yes then how

_____
_____
_____
_____

If no then wat are the adverse effects of these on health

_____
_____
_____
_____

How departmentally these are these are prohibited

_____
_____
_____
_____

How this project will effect on improving the public health?

_____
_____
_____
_____

Any suggestion or recommendation

_____
_____
_____
_____

Name of interviewer _____ **Date** _____ **Designation** _____

Name of interviewer _____ **Date** _____ **Designation** _____

Socio-Economic Survey (Key Informant) Questionnaire

Questionnaire No. | | | | |

1. Geographic location

Settlement / Kachi Abadi _____Tehsil/town_____ District _____

North _____ South _____

Respondent Name_____ Fathers Name _____ Age _____

Education (❑ Yes / ❑ No) if yes then what is qualification _____

Family size

Male	Female	System of family		Children
		Joint	Single	

2. Estimated population of area

Total no of HH	No. Mohalla / Streets	Type of Housing Units

3. Source of Drinking water

Water Supply	Groundwater / Hand-Pump	Water Filter Plant	Masjid	Bottle Water

a) Condition of available water sources

Easy Access	Partially Easy Access	Un Fit

b) availability of water supply water for houses

No of hours per day_____ no# houses for available #_____

c) ground water condition for use

Sweet water	Water table

d) Usages of ground water

Cleaning	Bathing	Cooking	Drinking	Other

e) do you use of treatment technique at house

❑ Yes ❑ No if yes what_____

f) how would you rate the quality of drinking water

❑ Good ❑ Acceptable ❑ Poor ❑ don't know

g) is there any water treatment facility available in village

❑ Yes ❑ No nearby is _____ it functional ❑ Yes ❑ No

h) in which months availability of water is most vulnerable _____

i) major water born disease _____

4. Sanitation

Do you have toilet within house premises ❑ Yes ❑ No how many_____

a) Types of toilet available in house

Flush to piped sewer system	Flush to septic tank	Flush to pit	Flush to open sewerage	Compositing toilet	PIT latrine	Bucket	Hanging toilet	Open defecation	others

How your HH disposes off waste water _____

How dispose of the solid waste collection _____

Any treatment measures are taken _____

5. General

Is there any NGO working on water or on sanitation? ❑ Yes ❑ No

If yes specify how / what type of /project doing ? _____

Your suggestions on to improved and effective water and sanitation system

_____

_____

Socio-Economic profile

(Focus Group Discussion)

1. Geographical information

Locality_____ Tehsil/Town_____ District _____

2. Population

Estimated population_____ No. HH_____

Family system

❑ Joint (in percentage) ❑ single_____

Structure of Housing

❑ Kachaa ❑ Pacca ❑ Kacha and Pacca

3. Ethnicity

S. No	Communities	No./Percentage (approx.)
Total		

4. Languages

❑ Sindhi ❑ Urdu ❑ Pashto ❑ Srieky ❑ Others _____

5. Major occupations

S. No	Occupation	Percentage

6. Educational facilities

Description	No. of institution				In case of no. nearest to the locality
	Girls	Boys	Girls	Boys	
Primary school					
Middle school					
High school					
Colledge					
Madersa					
Other (specify)					

7. Health facility

❑ Facility within village _____
❑ Government hospital _____
❑ BHU _____
❑ Mother and child care Health unit _____
❑ Dispensary _____
❑ Hakeem / Practitioners _____

8. Common Diseases in Village

❑ Malaria ❑ Typhoid ❑ Polio ❑ TB ❑ Diarrhea ❑ Haptitas
❑ Skin diseases ❑ Eye Diseases ❑ Any other) _____

9. Civic infrastructure

Type of Amenity	Available in the village	Available in nearby village/locality	Distance from the village
Electricity			
Water supply/Tap water			
Sui-Gas			
Fuel cylinder			
Filling station (patrol/Gas)			
Fuel Agency			
Cable Television			
Access to internet			
Telephone (land line)			
Post office			
Bank			
Mosque			
Graveyard			
Other			

10. Source of drinking water

Tap water/ water supply	Hand-pump	Bottled water	Public Filtration plant	Stream /canal	Others

Water table (ft) _____

Quality of table water for drinking

Excellent	Good	Unfit

11. Sewerage system availability in in locality ❑ Yes ❑ No

If not then where do you disposes your sewerage

Open pit	Septic tank	Open drain	Pipe	Socking pit	Other

Do you have any system for collection of solid waste ❑ Yes ❑ No

a) If yes give details _____

b) If No, then where do you dump your waste _____

Leadership Patterns

12. Who is the most influential person in the village

Designation	Name
MNA/MPA	
UC Member	
Village elder	
Teacher	
Cast/family elder	
Religious leader	
Other	

13. Conflict resolving patterns

How conflicts are resolved

Jirga	Tribal/cast/head	Family head	Court	Any other

14. Women participation

S. No	Activities	Participation Tick (yes/No)	Hours per day	% of Contribution
1.	House Hold			
2.	Child caring			
3.	Farming/crop activities			
4.	Livestock raring			
5.	Sale and purchase of goods			
6.	Produce products			
7.	Do formal jobs			
8.	Others			

a) Women contribute in HH income ❑ Yes ❑ No

If yes, how

_____

_____

b) Are women consulted in decision making matters ❑ Yes ❑ No

If yes, in what matters?

c) Is there any industry in your village or in the vicinity? ❑ Yes ❑ No

If yes which industry?

15. Does any NGO or CBO exist in the area? ❑ Yes ❑ No

If yes: explain their names and activities?

Do there exist any vulnerable households in the area ❑ Yes ❑ No

Widows	Handicapped	Homeless	Others

16. Specify the nearest facility or amenity? (KM)

❑ Police station ❑ Grain Market ❑ Cattel Market ❑ Other

State the pressings needs of the area

Any development in progress at your village regarding community benefit

Community perception about the project

Any specific observations

a) _____

b) _____

Facilitator: _____ **Date:** _____

Facilitator: _____ **Date:** _____

Age Distribution

Table A4-8 presents data related to the age group distribution of respondents in ten different Katchi Abadis. It shows the number of individuals in different age groups ranging from 18 to above 65 years, the percentage of individuals in each age group, and the total number of individuals in each Katchi Abadi.

Overall, the table shows that the largest age group in these Katchi Abadis is the 18-25 years age group, with a total of 46 individuals. The second-largest age group is the 36-45 years age group with a total of 44 individuals. The smallest age group is the above 65 years age group, with only 05 individuals.

When comparing the different Katchi Abadis, it can be observed that the age group distribution varies significantly between them. For instance, Mujahid Colony and Bilalabad have a relatively high percentage of individuals in the 26-35 years age group, while Ali Mohammad Goth has a higher percentage of individuals in the 18-25 years age group. Similarly, Quaid-e-Azam Colony has a higher percentage of individuals in the 36-45 years age group.

In conclusion, the data presented in the table provides useful insights into the age group distribution of individuals living in Katchi Abadis in the surveyed area. The differences in age group distribution between different Katchi Abadis suggest the need for tailored interventions and services to address the specific needs of each community.

Table A4-8: Age Distribution of Respondents

No.	Katchi Abadi Name	Age Group												Total
		18 - 25		26 - 35		36 - 45		46 - 55		56 - 66		Above 65		
		#	%	#	%	#	%	#	%	#	%	#	%	
1.	Zia Colony	1	7	4	29	3	21	1	7	4	29	1	7	14
2.	Quaid-e-Azam Colony	3	14	5	24	8	38	2	10	2	10	1	5	21
3.	Ali Mohammad Goth	9	41	2	9	4	18	5	23	1	5	1	5	22
4.	Mohammadi Colony D/D1	7	39	2	11	5	28	1	6	3	17	-	-	18
5.	Mujahid Colony	2	17	6	52	1	6	2	18	1	6	-	-	12
6.	Future Colony	3	27	1	9	2	18	3	27	2	18	-	-	11
7.	Sherpao Colony	8	44	2	11	5	28	1	6	2	11	-	-	18
8.	Sharif Colony	4	21	2	11	5	26	2	11	4	21	2	11	19
9.	Muslimabad	5	21	6	25	4	17	1	4	5	21	3	13	24
10.	Bilalabad	4	18	2	9	7	32	3	14	4	18	2	9	22

Marital Status

Table A4-9 provides information on the proportion of married and single individuals among the respondents in each Katchi Abadi, as well as the total number of individuals in each group. The data shows that the proportion of married individuals varies significantly across the different Katchi Abadis, with some having a very high proportion of married individuals (e.g. Sharif, Ali Mohammad Goth, Mohammadi and Quaid-e-Azam Colonies) and others having a slightly lower proportion (e.g. Future Colony). Similarly, the proportion of single individuals also varies across the different Katchi Abadis, with some having a high proportion (e.g. Muslimabad and Bilalabad Colonies) and others having a low proportion. Overall, this data provides some insights into the demographic characteristics of the different Katchi Abadis.

Table A4-9: Marital Statuses of Respondents

No.	Katchi Abadi Name	Married		Single		Total
		#	%	#	%	
1.	Zia Colony	10	71	4	29	14
2.	Quaid-e-Azam Colony	16	76	5	24	21
3.	Ali Mohammad Goth	18	82	4	18	22
4.	Mohammadi Colony D/D1	15	83	3	17	18
5.	Mujahid Colony	10	83	2	17	12
6.	Future Colony	7	64	4	36	11
7.	Sherpao Colony	12	67	6	33	18
8.	Sharif Colony	17	89	2	11	19
9.	Muslimabad	10	42	14	58	24
10.	Bilalabad	10	45	12	55	22

Religious Distribution

Table A4-10 presents information on the distribution of respondents' religions across ten Katchi Abadis. Zia Colony exhibits a significant Christian population, comprising approximately 57.14%, while Muslims represents around 42.86%. All respondents belonging from Quaid-e-Azam Colony, Ali Mohammad Goth, Mohammadi Colony D/D1, Sharif Colony, Mujahid Colony, Muslimabad, and Bilalabad were Muslims, indicating Muslim-majority communities in these Abadis. Future Colony indicates a dominant Muslim population (with approximately 81.82% of the respondents being Muslims) and about 18.18% Christians. At Sherpao Colony, 88.88% of the respondents were Muslims while 11.11% were Christians. The data highlights the religious diversity within the Katchi Abadis, with some Abadis exhibiting significant Christian populations alongside the prevailing Muslim majority.

Table A4-10: Religious Distribution Among Respondents

No.	Katchi Abadi Name	Religion (%)	
		Islam	Christianity
1.	Zia Colony	42.86	57.14
2.	Quaid-e-Azam Colony	100	-
3.	Ali Mohammad Goth	100	-
4.	Mohammadi Colony D/D1	100	-
5.	Mujahid Colony	100	-
6.	Future Colony	81.82	18.18
7.	Sherpao Colony	88.88	11.11
8.	Sharif Colony	100	-
9.	Muslimabad	100	-
10.	Bilalabad	100	-

Education

Table A4-11 presents information on the educational levels of respondents in ten Katchi Abadis. The data shows that overall illiteracy dominates in the Katchi Abadis and the majority of the respondents were found to be illiterate. Primary education being the second most common level of education. In terms of specific Katchi Abadis, Mujahid Colony has the highest percentage of illiterate residents (70.6%), while Zia Colony has the highest percentage of residents with primary education (35.7%). Sharif Colony has the highest percentage of residents with matriculation (27.3%) and intermediate (18.1%) education levels. These findings highlight overall low levels of education in these communities, which can have significant social and economic implications for residents.

Table A4-11: Literacy and Education level of Respondents

No.	Katchi Abadi Name	Illiterate	Primary	Middle	Matric	Intermediate	Graduation	Masters	Other
1.	Zia Colony	35.7	35.7	7.1	21.5	-	-	-	-
2.	Quaid-e-Azam Colony	62.5	22.5	-	7.5	5.0	2.5	-	-
3.	Ali Mohammad Goth	51.0	20.4	2.0	18.4	8.2	-	-	-
4.	Mohammadi Colony D/D1	47.6	23.8	-	23.8	4.8	-	-	-
5.	Mujahid Colony	70.6	17.6	-	11.8	-	-	-	-
6.	Future Colony	75.5	12.5	2.7	5.3	-	-	4	-
7.	Sherpao Colony	72.3	21.3	4.3	2.1	-	-	-	-
8.	Sharif Colony	27.3	18.1	-	27.3	18.1	4.6	4.6	-
9.	Muslimabad	23.8	14.3	-	19.0	28.6	9.5	4.8	-
10.	Bilalabad	65.1	13.1	5.4	9.3	-	7.1	-	-

Main Occupations

Table A4-12 shows the percentage distribution of occupations among the respondents in various Katchi Abadis. The occupations listed are agriculture, shopkeeper, trader, government service, private service, labor, livestock, fishing, housewife, and others.

Among the ten Katchi Abadis listed, the highest percentage of people engaged in agriculture are not reported. The highest percentage of shopkeepers are in Future Colony with 22.5%, while the highest percentage of traders are found in Muslimabad and Bilalabad with 4.8% and 3.2% respectively. The highest percentage of people in government service are in Zia Colony with 28.6%, while the highest percentage of people in private service are in Sherpao Colony with 33.8%. The highest percentage of labourers are found in Mujahid Colony with 58.8% and the highest percentage of livestock farmers are in Ali Mohammad Goth with 38.7%.

The highest percentage of housewives were found in Zia Colony with no other significant occupation reported for the majority of women. The respondents belonging to other occupations ranges from 2.3% in Sherpao Colony to 10% in Quaid-e-Azam Colony. Overall, the highest percentage of people engaged in any one occupation are labourers with 31.45%, followed by people in private service with 36.31%.

Table A4-12: Main Occupations of Respondents

No.	Katchi Abadi Name	Occupation (%)									
		Agriculture	Shopkeeper	Trader	Govt. Service	Private Service	Labor	Livestock	Fishing	House wife	Others
1.	Zia Colony	-	14.3	-	28.6	42.8	14.3	-	-	-	-
2.	Quaid-e-Azam Colony	2.5	12.5	-	-	30.0	42.5	-	-	2.5	10.0
3.	Ali Mohammad Goth	-	10.2	-	4.1	28.6	38.7	-	-	10.2	8.2

No.	Katchi Abadi Name	Occupation (%)									
		Agriculture	Shopkeeper	Trader	Govt. Service	Private Service	Labor	Livestock	Fishing	House wife	Others
4.	Mohammadi Colony D/D1	-	-	-	-	38.0	33.3	-	-	23.9	4.8
5.	Mujahid Colony	-	5.9	-	-	29.4	58.8	-	-	-	5.9
6.	Future Colony	-	22.5	-	17.1	48.3	7.3	-	-	-	4.8
7.	Sherpao Colony	-	9.5	-	7.6	33.8	46.8	-	-	-	2.3
8.	Sharif Colony	-	18.1	4.6	13.6	31.8	22.7	-	4.6	-	4.6
9.	Muslimabad	-	4.8	4.8	14.3	42.8	23.8	-	-	-	9.5
10.	Bilalabad	-	15.5	3.2	11.7	37.6	26.3	-	3	-	2.7

Housing

Table A4-13 shows that the overall housing ownership status in the surveyed area is 78.21% owned and 21.8% rented. This indicates that a significant portion of the population residing in these Katchi Abadis have been able to secure ownership of their dwelling units. Among the individual Katchi Abadis, Mohammadi Colony D/D1 has the highest ownership status with 95.2% owned and 4.8% rented, followed by Ali Mohammad Goth with 91.8% owned and 8.2% rented. On the other hand, Quaid-e-Azam Colony has the lowest ownership status with only 60% owned and 40% rented. It is also worth noting that the ownership status varies significantly across different Katchi Abadis, with some having a much higher proportion of rented units compared to others. For example, Bilalabad has 35% rented units while Mujahid Colony has only 11.8% rented units. Overall, this data suggests that while a significant portion of the population in these Katchi Abadis have been able to secure ownership of their homes, there is still a sizeable proportion of the population that remains in rented units. This highlights the need for policies and initiatives that can help these individuals and families secure ownership of their homes, which can provide long-term stability and security.

Table A4-13: House Ownership Status

No.	Katchi Abadi Name	Ownership Status	
		Owned	Rented
1.	Zia Colony	78.6	21.4
2.	Quaid-e-Azam Colony	60.0	40.0
3.	Ali Mohammad Goth	91.8	8.2
4.	Mohammadi Colony D/D1	95.2	4.8
5.	Mujahid Colony	88.2	11.8
6.	Future Colony	70	30
7.	Sherpao Colony	75	25
8.	Sharif Colony	77.3	22.7
9.	Muslimabad	81.0	19.1
10.	Bilalabad	65	35

Construction Type

Table A4-14 shows the percentage of katcha, pacca, and semi-pacca houses in each Katchi Abadi currently under use by the respondents. From the table, we can see that Mujahid Colony has the highest percentage of semi-pacca houses at 76.5%, followed by Future Colony with 78.6%. Meanwhile, Ali

Mohammad Goth has the highest percentage of pacca houses at 75.5%. On the other hand, the katcha houses are the lowest in most of the katchi abadis. The total percentage of katcha houses in all the Katchi Abadis is 6.41%, which is quite low. However, there is no data available for the katcha houses in Muslimabad, Mohammadi Colony D/D1, and Zia Colony. Overall, the majority of the houses in these katchi abadis are semi-pacca, followed by pacca houses. This indicates that there has been some level of development in these areas, and people are investing in improving their houses. The relatively low percentage of katcha houses also suggests that the government or private organizations might have provided some housing assistance or initiatives in these areas.

Table A4-14: Construction Type of House

No.	Katchi Abadi Name	Ownership Status		
		Katcha (%)	Pacca (%)	Semi Pacca (%)
1.	Zia Colony	-	57.1	42.9
2.	Quaid-e-Azam Colony	7.5	12.5	80.0
3.	Ali Mohammad Goth	8.2	16.3	75.5
4.	Mohammadi Colony D/D1	-	19.1	81.0
5.	Mujahid Colony	17.7	5.9	76.5
6.	Future Colony	8.5	78.6	12.9
7.	Sherpao Colony	11.3	68.4	20.3
8.	Sharif Colony	4.6	50.0	45.5
9.	Muslimabad	-	33.3	66.7
10.	Bilalabad	6.3	71.5	22.2

Access to Utilities

Table A4-15 provides information on the percentage of respondents households in ten different Katchi that have access to different utility facilities. The five types of utilities included in the table are electricity, gas, water supply, sewerage, and solid waste collection. The data shows that the level of access to utility services varies across the Katchi Abadis. Muslimabad has the highest level of access to both electricity and gas at 100%, while Sharif Colony has the lowest access to water supply at only 4.6%. Bilalabad has the highest level of access to solid waste collection at 43.4%, followed by Quaid-e-Azam Colony at 67.5%. However, Quaid-e-Azam Colony has no access to water supply and low access to sewerage at 17.5%. Ali Mohammad Goth has the lowest level of access to gas, water supply, and sewerage at around 10%, while Sherpao Colony has the highest level of access to water supply and sewerage at 50.6% and 41.6%, respectively. Overall, the table highlights the disparity in the provision of basic utilities in these Katchi Abadis, with some having high levels of access to certain services while lacking access to others.

Table A4-15: Access to Various Amenities and Utility Services

No.	Katchi Abadi Name	Utility Facilities (%)				
		Electricity	Gas	Water Supply	Sewerage	Solid Waste Collection
1.	Zia Colony	100.0	100.0	50.0	57.1	42.9
2.	Quaid-e-Azam Colony	100.0	92.5	-	17.5	67.5
3.	Ali Mohammad Goth	87.8	10.2	10.2	20.4	6.1
4.	Mohammadi Colony D/D1	76.2	95.2	47.6	38.1	47.6
5.	Mujahid Colony	82.4	94.1	-	11.8	17.7
6.	Future Colony	78.3	90.8	15.1	27.9	19.6
7.	Sherpao Colony	74.6	92.1	50.6	41.6	55.8

No.	Katchi Abadi Name	Utility Facilities (%)				
		Electricity	Gas	Water Supply	Sewerage	Solid Waste Collection
8.	Sharif Colony	100.0	95.5	4.6	13.6	50.0
9.	Muslimabad	100.0	100.0	9.5	23.8	28.6
10.	Bilalabad	100	90.3	38.5	18.6	43.4

Household Income

Table A4-16 shows the income group distribution of respondents in ten Katchi Abadis. The income groups are divided into nine categories: 1-1000 Rs., 10001-20000 Rs., 20001-30000 Rs., 30001-40000 Rs., 40001-50000 Rs., 50001-60000 Rs., 60001-70000 Rs., 90001-100000 Rs., and above 100000 Rs.

Mujahid Colony and Muslimabad have a significant proportion of households falling in the 1,001-20,000-income group, with Mujahid Colony having the highest percentage (29.4%). Mujahid Colony also has a high percentage of households in the 20,001-30,000-income group (47.1%). Future Colony and Zia Colony have a significant proportion of households falling in the 20,001-30,000-income group, with Zia Colony having the highest percentage (64.3%). Sharif Colony has a high percentage of households falling in the 30,001-40,000-income group (31.8%) and the 40,001-50,000-income group (14.3%). Ali Mohammad Goth and Quaid-e-Azam Colony have a relatively even distribution across income groups, with no single group having a majority. Sherpao Colony and Mohammadi Colony D/D1 have a significant proportion of households falling in the 30,001-40,000-income group (48% and 28.6% respectively), with Mohammadi Colony D/D1 also having a high percentage of households in the 40,001-50,000 income group (23.8%). Overall, we can see that the majority of households in these Katchi Abadis fall in the 1,001-30,000-income group, with Future Colony and Zia Colony having a particularly high percentage of households in this income range. There are also some households in the higher income groups, but they are in the minority. It's worth noting that this data only provides a snapshot of the income distribution in these informal settlements at a particular point in time, and the situation may change over time.

Table A4-16: Households Monthly Income

S. No.	Katchi Abadi Name	Income Group								
		1-1000 (Rs.)	10001-20000 (Rs.)	20001-30000 (Rs.)	30001-40000 (Rs.)	40001-50000 (Rs.)	50001-60000 (Rs.)	60001 – 70000 (Rs.)	90001 – 100000 (Rs.)	Above 100000 (Rs.)
1.	Zia Colony	7.1	21.4	64.3	7.1	-	-	-	-	-
2.	Quaid-e-Azam Colony	10.0	27.5	42.5	17.5	2.5	-	-	-	-
3.	Ali Mohammad Goth	8.2	26.5	38.8	20.4	6.1	-	-	-	-
4.	Mohammadi Colony D/D1	9.5	38.1	28.6	23.8	-	-	-	-	-
5.	Mujahid Colony	11.8	29.4	47.1	11.8	-	-	-	-	-
6.	Future Colony	8.8	55	30	-	4.2	-	-	2	-
7.	Sherpao Colony	7.5	23	48	15	-	6.5	-	-	-
8.	Sharif Colony	-	13.6	36.4	31.8	14.3	-	-	-	4.6
9.	Muslimabad	4.8	23.8	28.6	33.3	4.8	-	-	4.8	-
10.	Bilalabad	-	45	30	25	-	-	-	-	-

Incidence of Waterborne Diseases

Table A4-17 shows the incidence of water-borne diseases reported by the respondents in the surveyed Katchi Abadis. Zia Colony has reported a relatively higher incidence of water-borne diseases, with approximately 35.7% of respondents stating that they have experienced such diseases. On the other hand, 64.3% of respondents mentioned not having encountered water-borne diseases in the Abadi. Quaid-e-Azam Colony shows a lower incidence, with only 10.0% of respondents reporting the occurrence of water-borne diseases, while 90.0% stated not experiencing such diseases. In Ali Mohammad Goth, the incidence of water-borne diseases is reported to be relatively low, with 12.2% of respondents indicating that they have encountered such diseases. The majority, 87.8%, mentioned not having experienced water-borne diseases. Mohammadi Colony D/D1 exhibits a significantly lower incidence, with only 4.8% of respondents reporting the occurrence of water-borne diseases. The majority, 95.2%, mentioned not encountering such diseases in Abadi. Similarly, Sharif Colony and Mujahid Colony both report a low incidence of water-borne diseases, with 4.6% and 5.9% of respondents, respectively, stating that they have experienced such diseases. The majority in both Abadis, 95.4% and 94.1% respectively, mentioned not having encountered water-borne diseases. In Future Colony, 9% of respondents reported the occurrence of water-borne diseases, while 91% stated not experiencing such diseases. Sherpao Colony shows a relatively higher incidence, with 38% of respondents indicating the occurrence of water-borne diseases. On the other hand, 62% of respondents mentioned not encountering such diseases. Muslimabad demonstrates a low incidence, with 4.8% of respondents reporting the occurrence of water-borne diseases, while the majority, 95.2%, mentioned not experiencing such diseases. Lastly, Bilalabad reports a higher incidence, with 33% of respondents indicating the occurrence of water-borne diseases, while 67% mentioned not encountering such diseases. Overall, the data suggests variations in the reported incidence of water-borne diseases among different Katchi Abadis. Some Abadis show higher incidence rates, while others report lower rates. These variations may be influenced by various factors such as access to clean water, sanitation facilities, and hygiene practices within each Abadi.

Table A4-17: Response of Respondents Regarding Incidence of Water Borne Diseases

No.	Katchi Abadi Name	Incidence (%)	
		Yes	No
1.	Zia Colony	35.7	64.3
2.	Quaid-e-Azam Colony	10.0	90.0
3.	Ali Mohammad Goth	12.2	87.8
4.	Mohammadi Colony D/D1	4.8	95.2
5.	Mujahid Colony	5.9	94.1
6.	Future Colony	9	91
7.	Sherpao Colony	38	62
8.	Sharif Colony	4.6	95.4
9.	Muslimabad	4.8	95.2
10.	Bilalabad	33	67

Prevailing Waterborne Diseases

Table A4-18 shows the prevalence of different types of waterborne diseases in Katchi Abadis as reported by the respondents in surveyed Katchi Abadis. At Zia Colony, Quaid-e-Azam Colony, Ali Mohammad Goth, Mohammadi Colony D/D1, Sharif Colony, and Mujahid Colony, 100% of respondents reported the prevalence of diarrhea as a waterborne disease during the last year. No other specific waterborne diseases were mentioned in these Abadis. In Future Colony, respondents reported the

prevalence of several waterborne diseases. Out of the respondents, 30% reported experiencing cholera, 40% reported experiencing diarrhea, 30% reported typhoid, and there were no specific mentions of urological diseases, hepatitis, or other waterborne diseases. Sherpao Colony reported the prevalence of different waterborne diseases. Of the respondents, 85% reported experiencing diarrhea, 10% reported typhoid, 5% reported urological diseases, and no specific mentions of cholera, hepatitis, or other waterborne diseases were provided. Muslimabad respondents reported the prevalence of diarrhea as a waterborne disease, with 100% of respondents mentioning it as a prevalent disease during the last year. No other specific waterborne diseases were mentioned in this Abadi. In Bilalabad, respondents reported the prevalence of multiple waterborne diseases. Of the respondents, 10% reported experiencing cholera, 60% reported experiencing diarrhea, 20% reported typhoid, and 10% reported hepatitis. No specific mentions of urological diseases or other waterborne diseases were provided. Overall, the data suggests that diarrhea is the most prevalent waterborne disease in these Katchi Abadis. The prevalence of other waterborne diseases such as cholera, typhoid, urological diseases, hepatitis, and others varied among the Abadis. These variations may be influenced by various factors such as water quality, sanitation practices, and hygiene awareness within each Abadi.

Table A4-18: Prevalence of Waterborne Diseases during Last Year

No.	Katchi Abadi Name	Disease (%)					
		Cholera	Diarrhea	Typhoid	Urological	Hepatitis	Others
1.	Zia Colony	-	100.0	-	-	-	-
2.	Quaid-e-Azam Colony	-	100.0	-	-	-	-
3.	Ali Mohammad Goth	-	100.0	-	-	-	-
4.	Mohammadi Colony D/D1	-	100.0	-	-	-	-
5.	Mujahid Colony	-	100.0	-	-	-	-
6.	Future Colony	30	40		30	-	-
7.	Sherpao Colony	-	85	10	5	-	-
8.	Sharif Colony	-	100.0	-	-	-	-
9.	Muslimabad	-	100.0	-	-	-	-
10.	Bilalabad	10	60		20	10	-

Water Supply Source

Table A4-19 shows an overview of water supply sources available to the respondents households. In Zia Colony, the majority of households (66.6%) rely on piped water for their water supply. A small percentage (4.8%) depends on dug wells, while 23.8% of households acquire water through delivered/purchased tanker or cart services. Quaid-e-Azam Colony has a different water supply pattern, with only 7.1% of households having access to piped water from public sources. The majority (90.5%) relies on dug wells for their water supply, and a small percentage (2.4%) acquires water through delivered/purchased tanker or cart services. In Ali Mohammad Goth, 19.3% of households have access to piped water from public sources, while a minimal percentage (1.1%) relies on dug wells. The majority (63.6%) of households acquire water through delivered/purchased tanker or cart services. Mohammadi Colony D/D1 shows a relatively balanced distribution of water supply sources. Approximately 32.1% of households have access to piped water from public sources, 46.5% rely on dug wells, 10.7% acquire water through delivered/purchased tanker or cart services, and the remaining 10.7% have unspecified sources. In Sharif Colony, 33.3% of households have access to piped water from public sources, while

the majority (60.0%) relies on dug wells. A small percentage (6.7%) acquires water through delivered/purchased tanker or cart services. Mujahid Colony has a unique water supply situation, with 100% of households having access to piped water from public sources. Future Colony exhibits a varied distribution of water supply sources. Approximately 60% of households have access to piped water from public sources, 25% rely on dug wells, and 15% acquire water through delivered/purchased tanker or cart services. Sherpao Colony also shows a diverse distribution of water supply sources. About 45% of households have access to piped water from public sources, 30% rely on dug wells, and 25% acquire water through delivered/purchased tanker or cart services. In Muslimabad, approximately 36.8% of households have access to piped water from public sources, 34.2% rely on dug wells, 15.8% acquire water through delivered/purchased tanker or cart services, and 13.2% have unspecified sources. In Bilalabad, the majority (90%) of households have access to piped water from public sources, 10% rely on dug wells, and no households indicated acquiring water through delivered/purchased tanker or cart services. Overall, the data shows a mix of water supply sources in different Katchi Abadis, with variations in the availability of piped water, reliance on dug wells, and utilization of delivered/purchased tanker or cart services. The data highlights the need for improved access to safe and reliable sources of water in Katchi Abadis. The variation in water sources across different areas indicates the need for targeted interventions and policies that address the specific needs and challenges of each area.

Table A4-19: Respondents Households Water Supply Source

No.	Katchi Abadi Name	Piped (Public)	Dug Well	Delivered/Purchased	
				Tanker	Cart
1.	Zia Colony	66.6	4.8	23.8	4.8
2.	Quaid-e-Azam Colony	7.1	90.5	-	2.4
3.	Ali Mohammad Goth	19.3	1.1	63.6	-
4.	Mohammadi Colony D/D1	32.1	46.5	10.7	10.7
5.	Mujahid Colony	100.0	-	-	-
6.	Future Colony	60	25	15	-
7.	Sherpao Colony	45	30	25	-
8.	Sharif Colony	33.3	60.0	-	6.7
9.	Muslimabad	36.8	34.2	15.8	13.2
10.	Bilalabad	90	10	-	-

Sanitary Facilities Availability

Table A4-20 an overall average of 96.87%. Mujahid Colony, Muslimabad, Future Colony, Sharif Colony, Bilalabad, and Mohammadi Colony D/D1 all report 100% availability of toilets. Ali Mohammad Goth reports a slightly lower availability at 98%, while Sherpao Colony and Zia Colony report availability rates of 85%. Quaid-e-Azam Colony also reports 100% availability of toilets. Overall, the data suggests that most of the surveyed Katchi Abadis have a relatively high level of access to toilets.

Table A4-20: Toilet Facilities Available

No.	Katchi Abadi Name	Availability of Toilets (%)
1.	Zia Colony	85
2.	Quaid-e-Azam Colony	100
3.	Ali Mohammad Goth	98

No.	Katchi Abadi Name	Availability of Toilets (%)
4.	Mohammadi Colony D/D1	100
5.	Mujahid Colony	100
6.	Future Colony	100
7.	Sherpao Colony	85
8.	Sharif Colony	100
9.	Muslimabad	100
10.	Bilalabad	100

Perception of Project Benefits

Table A4-21 shows that the respondents have varying perceptions regarding the project benefits. The highest perceived benefit overall is resolving water issues. This suggests that access to clean water is a significant concern for the communities in these Katchi Abadi. The second-highest perceived benefit is in resolving sewerage issues. In terms of employment opportunities, the overall percentage is 10.1%, which is relatively low compared to other perceived benefits. However, some individual Katchi Abadi areas have higher percentages, such as Bilalabad and Zia Colony. Overall, the table suggests that the development of these Katchi Abadi areas is a priority for the communities living there. Improving living standards, generating income, and resolving basic infrastructure issues such as water and sewerage are essential for the well-being of these communities.

Table A4-21: Respondents' Perception of Project Benefits

No.	Katchi Abadi Name	Perceived Project Benefits					
		Employment Opportunities (%)	Better Living Standard (%)	Income Generation Activities (%)	Development of Area (%)	Water Issues Resolved (%)	Sewerage Issues Resolved (%)
1.	Zia Colony	9.1	18.2	3.0	24.2	21.3	24.2
2.	Quaid-e-Azam Colony	1.0	21.4	4.1	15.3	29.6	28.6
3.	Ali Mohammad Goth	0.9	21.4	6.0	14.5	26.5	30.7
4.	Mohammadi Colony D/D1	-	17.4	17.4	17.4	21.7	26.1
5.	Mujahid Colony	2.8	22.2	5.6	19.4	22.2	27.8
6.	Future Colony	3.8	27.5	8.9	18.3	26	15.5
7.	Sherpao Colony	4.7	27.9	6.1	22.3	30	9
8.	Sharif Colony	4.8	25.8	8.1	16.1	21.0	24.2
9.	Muslimabad	-	24.5	7.5	11.3	30.3	26.4
10.	Bilalabad	6.8	30	6.5	14.2	27	15.5

Gender Aspects

Gender issues are gaining importance in development projects because female members of the community are generally neglected while designing, assessing and implementing such projects. In general, the project area reflects a male dominated society. Women face difficulties in getting education and are not consulted for most of the decision–making processes. Females are generally more vulnerable than male members of the society. This project is also no exception to it. **Table A4-22**

shows that a total of 73 female respondents constituted the female sample size for the study. On overall basis, female respondents are approximately 40 percent of the total households sample for the study. However, there was some variation in the proportion of female respondents in individual Katchi Abadis.

Table A4-22: Women Sample Size in Katchi Abadis

No.	Katchi Abadi Name	Women Sample Size
1.	Zia Colony	4
2.	Quaid-e-Azam Colony	11
3.	Ali Mohammad Goth	11
4.	Mohammadi Colony D/D1	9
5.	Mujahid Colony	0
6.	Future Colony	0
7.	Sherpao Colony	8
8.	Sharif Colony	9
9.	Muslimabad	12
10.	Bilalabad	9

Age Composition

Age composition of female respondents is presented in **Table A4-23**. Based on the table, the age group with the highest total count is 18-25 years in all surveyed Katchi Abadis. It's important to note that age group distribution can provide insights into the demographics and social characteristics of a population, which can be helpful in developing policies and programs tailored to the specific needs of different age groups.

Table A4-23: Age Distribution of Female Respondents

No.	Katchi Abadi Name	Age Group						
		18 - 25	26 - 35	36 - 45	46 - 55	56 - 65	Above 65	Total
1.	Zia Colony	-	2	1	1	-	-	4
2.	Quaid-e-Azam Colony	4	3	2	1	1	-	11
3.	Ali Mohammad Goth	6	2	1	2	-	-	11
4.	Mohammadi Colony D/D1	5	1	2	1	-	-	9
5.	Mujahid Colony	-	-	-	-	-	-	0
6.	Future Colony	-	-	-	-	-	-	0
7.	Sherpao Colony	4	2	1	1	-	-	8
8.	Sharif Colony	4	2	2	1	-	-	9
9.	Muslimabad	5	3	1	2	1	-	12
10.	Bilalabad	4	1	3	1	-	-	9

Educational Status

Table A4-24 provides the literacy and education level of female respondents in ten Katchi Abadis. The data shows that there is a significant variation in the literacy rates and educational levels of female respondents across the different Katchi Abadis. The highest overall literacy rate of female respondents is in Bilalabad, where only 20% of female respondents are illiterate, and 40% have completed matriculation. Overall, the data highlights the need for targeted interventions to improve the literacy and educational levels of female residents in these Katchi Abadis.

Table A4-24: Literacy and Education level of Female Respondents

No.	Katchi Abadi Name	Illiterate	Primary	Middle	Matric	Intermediate	Graduation	Masters	Other
1.	Zia Colony	50.0	50.0	-	-	-	-	-	-
2.	Quaid-e-Azam Colony	33.3	66.7	-	-	-	-	-	-
3.	Ali Mohammad Goth	-	33.3	-	50.0	16.7	-	-	-
4.	Mohammadi Colony D/D1	41.7	33.3	-	16.7	8.3	-	-	-
5.	Mujahid Colony	33.3	33.3	-	33.3	-	-	-	-
6.	Future Colony	30	-	40	-	30	-	-	-
7.	Sherpao Colony	45	30	10	5	-	-	-	-
8.	Sharif Colony	-	-	-	100.0	-	-	-	-
9.	Muslimabad	50.0	-	-	-	50.0	-	-	-
10.	Bilalabad	20	10	30	40	-	-	-	-

Occupational Status of Female Respondents

Table A4-25 presents the occupational distribution of female respondents. It is evident from the table that the majority of female respondents in all Katchi Abadis are housewives. The percentage of female respondents who are housewives ranges from 60% in Bilalabad to 95% in Sherpao Colony. The percentage of female respondents who are employees is relatively low, ranging from 5% in Sherpao Colony to 33.3% in Mujahid Colony. Similarly, the percentage of female respondents who are engaged in labor work is also low, ranging from 0% in Mujahid Colony to 15% in Bilalabad and Future Colony. Overall, the data suggests that the majority of female respondents in these Katchi Abadis are not engaged in paid work outside their homes. This highlights the need for interventions to create economic opportunities for women and improve their economic empowerment.

Table A4-25: Occupational Distribution of Female Respondents

No.	Katchi Abadi Name	Occupation		
		Housewife	Employee	Labor Work
1.	Zia Colony	76.0	24.0	-
2.	Quaid-e-Azam Colony	83.4	13.3	3.3
3.	Ali Mohammad Goth	83.3	16.7	-
4.	Mohammadi Colony D/D1	81.7	11.6	6.7
5.	Mujahid Colony	66.7	33.3	-
6.	Future Colony	80	15	5
7.	Sherpao Colony	95	5	-
8.	Sharif Colony	80.0	20.0	-
9.	Muslimabad	90.0	10.0	-
10.	Bilalabad	60	25	15

Information on Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) and Gender Based Violence (GBV);

The World Bank (Bank) has been taking concerted measures to strengthen its approach to the prevention and mitigation of SEA/SH risks in Bank-financed projects. In this scenario, the female respondents identify some facts during the survey on GBV, SEA/SH Prevention and Response which are as under:

- The main problem of Zia Colony and Muslimabad is that the schools are far away, and girls are forced to go out alone and public transport is also not easily accessible in these settlements. Therefor females sometimes remain restricted to houses, and they cannot easily go outside and do not have the easy access to the basic facilities. The female of the area generally practice veil (Purdah) and the young girls generally restrict their movement even for essential visits such as going to hospitals unless accompanied by elderly person.
- Sexual harassment is not common in the area as reported by the residents. However, domestic violence, though not reported during the surveys, cannot be ruled out.
- In the Zia Colony and Muslimabad colony, the females have low literacy rate, because the community comprises mostly uneducated family heads, and they do not allow the girls to go outside.
- During the survey, a respondent said that she has four daughters, and they are studying in different levels of higher education, even though she is not financially strong, but she is supporting her daughters for the education.
- In all the consulted Katchi Abadis women participate in household decisions, but not in major decisions of property buying and selling. They rarely have the property ownership rights.
- In Ali Mohammad Goth and Muslimabad Colony, women do not have specific restrictions, but due to some incidents of theft they avoid going outside alone.

Gender issues in the Project Area

Local women pointed out the following major issues relating to these project activities:

- Local women mobility is restricted because of construction activities in populated areas;
- Development works will be carried out fast enable the communities carried out their normal life and emergency requirements of women and children will have to go hospitals for health care purposes; alternate routes may be provided during project works.
- Women of the Katchi Abadis demanded that urgent improvement required in available health facilities in the local hospitals.
- Women of the Katchi Abadis demanded that up gradation of educational facilities will be carried out under project works.
- Drinking water is not safe and insufficient. During the survey local women community demanded that water and sewerage conditions will be improved.
- The young, educated women requested for jobs, hence such type of development project may be started where the local women will be provided jobs.
- Local women are doing the embroidery work for domestic use; their skill should be enhanced through providing training and setting up of the skill development centers in the project area.
- The people of Katchi Abadis are against “water delivery via tanker” as they are major source of road accidents and degradation of roads. It is being commonly observed that access roads near water hydrants are badly destroyed by water spilling tankers.

Annexure - 5: Assessment of Potential E&S Impacts and Risks

This chapter identifies and assesses the potential impacts of Improved Water Supply and Sewerage in additional Low-Income Communities Project on physical, biological and socio-economic environment that could arise during pre-construction (design), construction and operational phases of the project. The impact analysis has been performed keeping in view the information and data available regarding project interventions, primary field studies and secondary data review. Mitigation measures have been proposed taking guidance from the local laws and guidelines, WB ESS, WB EHS Guidelines, OSHA Standards, Health & Safety Executive (UK) and where applicable the GIIP. Identified impacts have been arranged in line with ESS 1-10 and mitigation hierarchy as per ESS1 has been followed for devising the mitigation measures.

Methodology for Screening of Impacts

The methodology for assessing the risk level associated with each potential impact is presented below. Risk is assessed as the likelihood that the activity will have an effect on the environment as well as the consequence of the effect occurring. It is often described like this:

Risk = Likelihood × Consequence

Likelihood Scale

Likelihood	Definition	Scale
Certain	Will certainly occur during the activity at a frequency greater than every week if preventative measures are not applied	5
Likely	Will occur more than once or twice during the activity but less than weekly if preventive measures are not applied	3
Unlikely	May occur once or twice during the activity if preventive measures are not applied	2
Rare	Unlikely to occur during the project	1
(Adapted from: EPA Victoria, 2004. Site EMP Kit- Guidance Notes)		

Consequence Scale

Consequence	Definition	Score
Catastrophic	The action will cause unprecedented damage or impacts on the environment or surrounding communities e.g., extreme loss of soil and water resources and quality from storm water runoff, extreme pollution of soil and water resources including major contamination from hazardous materials, widespread effects on ecosystems with deaths of fauna/flora, widespread community impacts resulting in illness, injury or inconvenience, loss or destruction of archaeological or historical sites. Occurrence will almost certainly result in the work being halted and a significant fine.	5
Major	The action will cause major adverse damage on the environment or surrounding communities e.g., major loss of soil and water resources and quality from storm water runoff, major pollution of soil and water resources including contamination from hazardous materials, significant effects on ecosystems with isolated deaths of non-vulnerable flora and fauna, significant annoyance or nuisance to communities, major	3

Consequence	Definition	Score
	damage to or movement required to archaeological or historical sites. Occurrence may result in work being halted and a fine.	
Moderate	The action will cause limited adverse impacts on the environment or surrounding communities e.g., Localized short term noticeable changes in storm water quality, short term minor changes on ecosystems, some annoyance or nuisance to communities, isolated or partial damage to archaeological or historical sites, work is unlikely to be halted, fines unlikely.	2
Minor	No or minimal adverse environmental or social impacts e.g., no measurable or noticeable changes in storm water quality. Water quality remains within tolerable limits, little noticeable effect on ecosystems, no or isolated community complaints, no or unlikely damage to archaeological or historical sites no likelihood of being fined.	1
(Adapted from: Environmental Management for Construction Handbook-Safeguards Unit Central & West Asia Department-ADB)		

Risk Score Table

		Consequence			
		Catastrophic	**Major**	**Moderate**	**Minor**
Likelihood	Certain	**25**	**15**	**10**	5
	Likely	**15**	**9**	6	3
	Unlikely	**10**	**6**	4	2
	Rare	5	3	2	1
Risk	**Significant**	**15-25**			
	Medium	**6-10**			
	Low	**1-5**			

Pre-Construction Phase

Screening of potential impacts during the pre-construction phase is provided in **Table A5-1**.

Table A5-1: Screening of Possible Impacts during Pre- Construction Phase

No.	Potential Issue	Relevant ESS	Likelihood	Consequence	Risk Level	Residual Impact
1.	Lack of appropriate E&S personnel with PIU, CSC, and Contractors	ESS1	Certain	Major	Significant	Low
2.	Improper location of worker camps leading to environmental and social issues	ESS4	Likely	Major	Medium	Low
3.	Resettlement impacts	ESS 5	Likely	Major	Medium	Low
4.	Impacts Associated with Anti Encroachment Drive	ESS 5	Likely	Major	Medium	Low

Critical Risk Level

Significant Risk Level

Medium Risk Level

Low Risk Level

Lack of E&S Capacity with PIU, CSC and Contractors

a) Impacts

E&S personnel in the required numbers and with the required skillsets are necessary at PIU, CSC and Contractors' level. Lack of E&S personnel's capacity or selection of environment non-responsive contractors may result in failure of ESMP implementation and may be a source of number of non-compliances. Inadequate resources will lead to major impacts and risk in the physical, biological and social environment and eventual harm to environment and non-compliances with ESMP requirements.

a) Mitigation Measures

Mitigation measures include:

- PIU will recruit qualified CSC and Contractors who are able to implement the Project's Environmental, Social, Health and Safety requirements as per the desired standards.
- Education, qualification and experience requirements of personnel (Section 6.8.2) will be included in the bidding documents and considered by the supervision consultant when they give approval to the Contractor.
- PIU will ensure that Contractors with poor environmental, health, and safety management are not hired.
- PIU will ensure that Contractor's qualifications as stated in this ESMP to be included as the pre-qualification criteria in the short-listing process.
- PIU will ensure that the conditions of the ESMP are correctly reflected in the contractor's bidding documents and the supervision consultant's TOR.
- PIU – KWSSIP will ensure inclusion of ESMP in the bidding documents.
- PIU - KWSSIP will ensure that the project contractors are selected on merit and necessary funds have been allocated in the Contract documents for ESMP implementation and monitoring.
- Guidelines for the preparation of above-mentioned plans are discussed.

Security Management Guidelines for Contractors

The Contractor during construction phase will use security arrangements and personnel to safeguard the installations, sites and personnel.

To accomplish project security objectives, the security should be provided for the following:

- Construction camps
- Project offices and work sites;

- Visitors and foreign consultants
- Critical assets and infrastructure related to the project; and
- Local labors' residential accommodation and other facilities.

Security Guidelines for the Project

- The operations and selection of the Project's security personnel will be guided by the relevant provisions of ESS 2 (Labor conditions) and ESS4 (Community Health, Safety and Security).
- Adoption/compliance with the World Bank Group's Good Practice Notes on Assessing and Managing the Risks and Impacts of the Use of Security Personnel and a project/contract specific Code of Conduct for the security personnel.
- Security will be provided in a manner that does not jeopardize the community's safety and security, or the KWSC's relationship with the community.
- Security arrangements will follow the principle of proportionality, respect for human rights, and good international practice.
- Community engagement will be maintained about the project's impacts on community safety and security, create awareness concerning the Code of Conduct commitment and project grievance mechanism, as outlined in the Stakeholder Engagement Plan (SEP) and SEA/SH mitigation measures given in the ESMP.
- Contractor's Community Liaison Officer (CLO) will share information with nearby communities if required, about security arrangements, the Contractor's security policies, and the expected conduct of security personnel.
- Arrange dialogue with communities about security issues to identify potential risks and local concerns, and can serve as an early warning system.
- Maintain coordination with the contractors regarding security issues.

Security Guidelines for Contractors

- Contractors will maintain liaison and coordination with any government's security agencies deployed in the area;
- The Contractor will carry out a continuous risk assessment of the security arrangements in place, monitor its security personnel, and identify any necessary corrective or preventive actions for continuing security operations.
- The contractor will prepare and implement clear standard operating procedures (SoP) for the security personnel;
- Security personnel will not use force or extract work from workers;
- The Contractor will ensure that those providing security are not implicated in past abuses;
- The Contractor will provide adequate training in the use of force and appropriate conduct toward workers and communities;

- The Contractor will ensure that security personnel act within the applicable legislation of the province / country;
- The Contractor will not sanction any use of force except when used for preventive and defensive purposes in proportion to the nature and extent of the threat;
- The Contractor will provide a grievance mechanism to express concerns about the security arrangements and acts of security personnel;
- If security personnel are permitted to use force, instructions must be clear on when and how force may be used, specifying that security personnel are permitted to use force only as a matter of last resort and only for preventive and defensive purposes in proportion to the nature and extent of the threat, and in a manner that respects human rights;
- Security personnel will be instructed to exercise restraint and caution, clearly prioritizing prevention of injuries or fatalities and peaceful resolution of disputes. The use of physical force will be reported to and investigated by the Contractor;
- Any persons injured as a result of the action of security personnel will be transported to medical facilities;
- The instructions for security personnel will make clear that arbitrary or abusive use of force is prohibited;
- Unlawful acts of any security personnel will be reported to the appropriate authorities.
- The Contractor may seek support from government authorities or other providers of the security services to aid preventative planning, evaluation, monitoring and follow-up to ensure security services providers meet Project expectations. Support may include strategies to identify and manage presence of ex-combatants and ex-military personnel within the community and within the Project security services.
- The Contractor's security services' responsibilities will include preventing hazardous materials or waste from leaving the Project site or the hazardous waste disposal site for the Project.

The Contractor will need to establish mitigation measures in relations to engaging and partnering with local stakeholders, such as supporting the extension of policing services to prevent the intensification of violent conflicts.

Improper Location of Worker Camps Leading to Environmental and Social Issues

a) Impacts

- The duration of the construction activity for the project is expected to be 02 years and approximately 250 skilled / semi-skilled workers will be engaged.
- Their interaction with the local community might lead to privacy issues for the nearby community and unwarranted exposure to Gender Based Violence, sexual exploitation and abuse (SEA), violence against children and sexual harassment.
- Besides, improper disposal of sewage and solid waste from these camps may cause vector borne diseases, unhygienic conditions and aesthetic issues.

b) Mitigation Measures

- The Contractor will hire local workforce at the most for the project's construction works in selected Katchi Abadis. Local workforce suitably skilled with water and sewage pipeline trenching and laying works is readily available in all areas of Karachi and the need for their permanent stay at the campsites will be minimal.
- The campsites will mainly be utilized for the temporary facilities such as workers washrooms, rest areas and temporary placement of construction material and only security guards will be required to have permanent stay at the campsite.
- There are local grounds and open spaces available in the vicinity of selected Katchi Abadis which could be utilized for setting up temporary material storage Camp sites.
- Final locations will be selected by the Contractor with the approval of Supervision Consultant with a key consideration that the selected locations are appropriately distant from settlements and religious and / or cultural facilities.
- The Contractor in collaboration with the PIU/CSC will ensure that camps are suitably separated from local communities with strict protocols for interaction with local communities in order to avoid impacts from labor influx and having minimal disturbance to the nearby communities.
- Contractors will follow whereas PIU will ensure the adherence to the labor standards including Provincial Labor Laws and ILO Standards for work hours, worker's payments & compensations.
- In line with the KWSSIP Labor Management Procedures, the contractor will prepare site-specific Workers Camp Management Plan and Labor Management Plan (LMP) and ensure its effective implementation.

Other measures that the contractor will take to prevent and respond to SEA/SH risks in Bank-financed projects:

- Develop a Code of Conduct (COC) for all site personnel, and ensure that all site personnel sign and abide by it.
- Provide proper training to staff and workers on the prevention of SEA/SH/GBV, which will be resourced by the contractor, provided on-site, and include awareness and information on the effects and consequences of these issues.
- Avoid entering settlements where possible and identify alternate routes for the communities if they must be used.
- Incorporate provisions related to SEA/SH/GBV in the bidding document.
- Engage skilled trainers to raise awareness among project workers of the risks, expected behaviors, and consequences of violations, communicated through training, and publicized codes of conduct.
- Raise awareness of the risks among community members and local health authorities and inform them about available grievance mechanisms.
- Conduct extensive training for awareness raising strategy which describes how workers and local communities will be sensitized to SEA and SH risks, and the worker's responsibilities under the CoC.

- Conduct induction training or workshops to introduce the basics of health and hygiene and the necessary preventive measures against diseases.
- Ensure necessary medical screening of all workers and staff and submission of proof of vaccination (COVID-19) prior to any employment.
- Provide workers with training on the Worker's GRM so that they know their rights and responsibilities.
- Ensure the availability of complaint boxes at all work sites, allowing workers to report any issues and wrongdoings.

Impacts on structures and Resettlement Issues

a) Impacts

The project will cause disturbance to the assets of 34 PAPs in terms of demolition of ramps and stair steps outside their houses, coming under the trenching area.

b) Mitigation Measures

- As described earlier, an Abbreviated Resettlement Plan (ARP) has been prepared for the proposed project in compliance with the WB ESS5. The effective implementation of the ARP will ensure that the resettlement impacts of the project described above are adequately addressed. Compensation and assistance will be paid to the PAPs in accordance with the ARP.
- Construction activities will not commence until all the compensation and assistance have been provided to the PAPs.

Impacts Associated with Anti Encroachment Drive

Informal settlements and squatters are widespread in Karachi, including residential and commercial encroachers on vacant lands, sidewalks, public spaces etc. A major Anti-Encroachment Drive (AED) was initiated in Karachi in October 2018 on the order of the Supreme Court of Pakistan. The Court ordered to vacate public spaces (such as parks, footpaths, amenity plots) across the city from unauthorized uses and occupations. The order is currently under implementation by various civic and local agencies, including KMC, who are required to report periodically to the Court regarding progress. The focus of the AED is on commercial activities encroaching on public spaces. Thousands of businesses, street vendors, and hawkers have been affected, primarily in most commercial districts. Acknowledging the adverse impacts of AED on the poor and vulnerable groups, the GoS and local agencies like KMC are making efforts to relocate some affected businesses.

a) Zone of impact

In general, for the proposed Improved Water Supply and Sewerage in additional Low-Income Communities Project, the zone of impact for the project alignment could be defined as the space (narrow corridors) required for the laying of water and sewerage infrastructure, construction of overhead / underground tanks and pump rooms and any additional area required for construction-related activities (stocking of materials, backfill, the area used by construction labor, or any other temporary use etc.).

b) Methodology Adopted for AED-Related Screening

The AED-related screening was assessed through the following means:

- Information from a focal person of the concerned district;
- Visual observations of focal persons, consultants, and PIU-KWSSIP specialists at the time of screening survey; and
- Public consultations.

c) Screening of AED Affected Areas and Project

- The Commissioner's office was approached to collect previous data available with the department with reference to AED. Unfortunately, no past data is available in this regard, therefore, AED-related screening of proposed project sites was carried out in different districts of Karachi with the help of focal persons of District Municipal Corporations (DMCs), Municipal Corporations (MCs), and District Councils nominated by concerned Deputy Commissioners' offices.
- Joint visits of focal persons from civic agencies, Environmental and Social Experts of KWSSIP and the E&S Consultant were conducted to screen out the proposed project affected by AED during July 2022.
- Based on the information provided by the focal person, visual observations, and public consultations, it is concluded that no AED has been carried out in the zone of impact of the proposed project since October 2018. No AED is expected to be carried out in the project's zone of impact as this zone is clear of any AED.

Construction Phase

Screening of potential impacts during the construction phase of the project are provided in **Table A5-2**.

Table A5-2: Screening of Possible Impacts during Construction Phase

No.	Potential Issue	Relevant ESS	Likelihood (Certain, Likely, Unlikely, Rare)	Consequence (Catastrophic,Major, Moderate, Minor)	Risk Level (Significant, Medium, Low)	ResidualImpact (Significant, Medium, Low)
1.	Inadequate Implementation of ESMP, OHS, CHS and Other Specific Plans	ESS1: Assessment and Management of E&S Risks and Impacts	Certain	Major	Significant	Low
2.	Occupational Health & Safety Impacts	ESS2: Labor and Working Condition	Certain	Major	Significant	Low
3.	Communicable Diseases - COVID- 19		Likely	Major	Medium	Low
4.	Working Conditions		Likely	Major	Medium	Low
5.	Employment of Child Labor		Likely	Major	Moderate	Low
6.	Employment Generation		Overall Positive			
7.	Dust Emissions from Construction Activities	ESS3: Resource Efficiency and Pollution Prevention	Likely	Major	Medium	Low
8.	Noise from Construction Activities		Likely	Moderate	Medium	Low
9.	Solid Waste Management - Generation of Excavated Material, Old Asbestos Pipes, Kitchen Waste etc.		Certain	Major	Significant	Low
10.	Untreated Disposal of Effluent from Worker Camps		Unlikely	Minor	Low	Low
11.	Impacts associated with Construction of Overhead / Underground Tanks and Pump Rooms		Unlikely	Moderate	Low	Low
12.	Improper Site Restoration		Likely	Major	Medium	Low
13.	Community Health & Safety		Certain	Major	Significant	Low

No.	Potential Issue	Relevant ESS	Likelihood (Certain, Likely, Unlikely, Rare)	Consequence (Catastrophic,Major, Moderate, Minor)	Risk Level (Significant, Medium, Low)	ResidualImpact (Significant, Medium, Low)
14.	Labor Influx / SEA – SH – GBV Incidents	ESS4: Community Health and Safety	Likely	Moderate	Medium	Low
15.	Restricted Access		Likely	Moderate	Medium	Low
16.	Construction Traffic Management and Safety		Likely	Moderate	Medium	Low
17.	Inadvertent Damage to Existing Infrastructure and Utilities		Likely	Moderate	Medium	Low
18.	Stakeholders Concerns and Engagement	ESS10: Stakeholder Engagement and Information Disclosure	Unlikely	Moderate	Low	No residual Impact

Critical Risk Level

Significant Risk Level

Medium Risk Level

Low Risk Level

Inadequate Implementation of ESMP, OHS, CHS and Other Specific Plans

a) Impacts

Inadequate implementation of ESMP and associated plans will result in major concerns in the form of community grievances, environmental / social impacts and risking the health and safety of the workforce.

b) Mitigation Measures

- The Contractor will prepare and implement Site Specific Environmental and Social Management Plan (SSESMP), OHS Plan, CHS Plan and other required plans based on the ESMP guideline. These procedures and plans will be approved by the PIU and CSC before the Contractor commences any physical works on ground.
- The CSC and Contractor will recruit qualified and experienced Environment, Health, Safety and Social Staff in line with the requirements mentioned in Section 6.8.2, .
- PIU - KWSSIP will review the Contractor's capacity with respect to safeguard management . Contractors not possessing the required capacity for E&S safeguards management will not be pre-qualified.

Occupational Health & Safety Impacts

a) Impacts

- Occupational Health and Safety risks related to the project will mainly be associated with the project's construction phase as the workers will be exposed to physical hazards such as trip and fall accidents near deep excavations for UGR or working at height (for OHT), heat stress / heat stroke occurrences during extreme hot weather, increased levels of dust at sites and hazards related to welding works such as; Electrical hazards, Heat related risks, Fire related risks, Asphyxiation risks, Fumes / respiratory risks and Gas use and storage risks etc. and risks associated with connecting the sewerage network to the KWSC's sewerage mains.
- During excavation activities, workers may encounter Asbestos Cement (AC) pipes that could either be abandoned or in use by the current water / sewerage network in Katchi Abadis. Accidental breakage of these AC pipes during excavation works could pose health hazard to workers that has latent effect in the long term, such as asbestosis or lung cancer.

b) Mitigation Measures

- Before initiating construction activities, the Contractors will prepare Occupational Health and Safety (OHS) Management Plan in accordance with national / local regulatory frameworks . The OHS plan would include OHS Policy Statement, OHS Organization, SOPs for all works, Hazard Identification and Risk Management, requirement of conducting Job Hazard Analysis and preparing Method Statements containing OHS aspects, OHS training requirements, incident recording and reporting protocols, and the OHS plan needs to be approved by the supervision consultant before start of construction.
- The Health & Safety Framework by the World Bank will be followed by the PIU-KWSSIP and the Contractors, and reflected in OHS plan.

- Specific mitigation guidelines for dealing with various hazards associated with the proposed construction activities as well as guidelines for the preparation of OHS Plan are provided in this Chapter.
- Established occupational health and safety protocols on COVID19 i.e. Health & Safety of Building and Construction Workers12 - Issued by Ministry of National Health Services, Regulations and Coordination, GoP - April, 2020 will be followed.
- Contractors will prepare an Emergency Preparedness and Response Plan (EPRP) as part of the OHS Plan to contain larger emergencies.
- PIU will work with the national / provincial emergency response services to ensure any external emergency response arrangements (Fire, Ambulance, Epidemic Control etc.), if the resources available with the Contractor are not sufficient to contain any such emergencies.
- At every workplace, a readily available first aid unit, including an adequate supply of sterilized dressing material and appliances, will be provided. Suitable transport will be provided to facilitate the transfer of injured or ill persons to the nearest hospital.
- At every workplace and construction camp, proper equipment and paramedical staff will be provided.
- The Contractor will maintain site safety and install hard barricading, flexible green net, signboards, temporary safety and traffic diversions throughout the construction period and provide personal protective equipment (PPE) to all the workers working at the construction sites.
- Where workers are required to work at height during trenching, appropriate fall protection systems, such as safety nets or guardrails, will be in place to prevent falls. Workers will be equipped with appropriate personal protective equipment (PPE) such as safety harnesses, hard hats, safety glasses, and safety shoes. PPE should be inspected before each use to ensure it is in good condition.
- Workers will be trained in safe work practices and procedures, including how to use protective equipment, how to identify hazards, and how to respond in the event of an emergency.
- Zero tolerance to loss of life policy will be developed and implemented by the Contractor.
- The contractor will ensure organization of Health and Safety trainings for all site personnel throughout the construction period.
- In case an accident in the form of injury or fatality affects any workers, they or their legal heirs will be compensated by following Sindh Workers Compensation Act, 2015.
- Specific mitigation guidelines for dealing with various hazards associated with the proposed construction activities are provided in this Chapter.
- If any AC pipes are found during excavation activities, disposed through SEPA certified waste handlers.

12 ttps://storage.covid.gov.pk/new_guidelines/01June2020_20200411_Guidelines_for_the_health_&_safety_of_building_&_construction_workers_1101.pdf

Communicable Diseases - COVID- 19

a) Impacts

Communicable diseases such as COVID-19 may be introduced due to the immigration of workers associated with the project.

b) Mitigation Measures

The Contractor will ensure the following measures:

- Health screening of workers at the time of their induction as well as on periodic basis will be carried out.
- Implementation of health and safety protocols on COVID19 i.e. Health & Safety of Building and Construction Workers - Issued by Ministry of National Health Services, Regulations and Coordination, GoP - April, 2020.
- Awareness among workers will be created on proper sanitation and hygiene practices;
- Good housekeeping practices will be maintained at camp and project sites;
- Adequate personal hygiene facilities will be provided in good condition with adequate supply of clean water;
- Arrangements will be made to treat the affected workers on time to control the movement of vectors diseases;
- Contractor will implement ECP 10: Construction Camp Management;
- Cleaning staff will be appointed for maintaining cleanliness at Campsites.

Working Conditions

Around 250 construction workers will be on project sites and a larger percentage of them will be sourced from the local communities.

a) Impacts

Poor enforcement of labor laws in Pakistan may lead to labor right abuses.

b) Mitigation Measures

- Contractors will follow the labor standards including Provincial Labor Laws and ILO Standards for work hours, workers payments & compensations.
- Workers will be provided with training on the existing GRM so that they know their rights and responsibilities, and the availability of complaint box allowing for workers to report any wrongdoings.
- Effective compliance of LMP will be ensured.

Employment of Child Labour

a) Impacts

Major impacts of child labour include psychological, physical damage to the child being employed, deprivation of education and chances of sexual exploitation. The child labour is common in the low-income groups however in the construction industry this practice is not common. The parents of underage children belonging to low-income groups prefer to get their children hired as labour. However, local legislation prohibits the employment of children and restrict the employment of adolescents in certain occupations and processes such as construction industry.

b) Mitigation Measures

- The Contractor will have its employment policy in accordance with relevant acts, guidelines and labor policies i.e. The Sindh Prohibition of Employment of Children Act, 2017 and ESS-2;
- No child below 18 years of age will be allowed to be employed in any construction work by the – construction contractors, sub-contractors and any service providers.
- Contractor will ensure that all persons at site are adults and have their government issued identity card with them.

Employment Generation

Primarily a positive impact, the project will create reasonable temporary employment for construction workers, maintenance, support, administrative, security and project management staff. The majority of project staff are expected to be recruited locally from within the native / local workforce. It is expected that around 250 employment opportunities will be created during the construction period.

Dust Emissions from Construction Activities

a) Impacts

- Excavation works for laying of water and sewerage network could result in generation of dust while the impacts of dust emissions will majorly be limited to the work areas and its surroundings.
- Dust could cause nuisance to the identified Sensitive Receptors in proximity to the project sites, that could get affected by dust emissions if adequate mitigation measures are not applied.

b) Mitigation Measures

Specific mitigation measures for protecting the sensitive receptors from construction related dust impacts includes:

- Installation of signboards at prominent locations near the sensitive receptor locations to provide awareness and taking necessary measures for restricting the impacts of dust.
- Regular manual water sprinkling at work areas near the sensitive receptors to restrict emissions of dust during windy days.
- Restoration of site immediately after laying of the water and sewer networks.

- Immediate removal of excavated material from sites nearby sensitive receptors so that its emission, runoff and accumulation on streets could be avoided.
- Limiting speed of construction vehicles in the project area and specifically near the sensitive receptors.
- Regular training of the drivers to ensure implementation of speed limits.
- Project's Grievance Redress Mechanism will deal with any public complaints related to excessive dust and will resolve the complaint on immediate basis.
- Stockpiled soil and sand will be slightly wetted before loading, particularly in windy conditions.
- Vehicles transporting soil, sand and other construction materials will be covered with tarpaulin.
- Limitations to the speeds of such vehicles as felt necessary and transport through densely populated area will be avoided.

Noise from Construction Activities

a) Impacts

Construction activities will mainly involve use of manual excavation equipment such as shovel, hoe and pickaxe etc. Such activities may not generate higher noise levels however keeping in view the proximity of sensitive receptors to the construction areas, it is anticipated that they noise may cause nuisance if adequate mitigation measures are not applied.

b) Mitigation Measures

Specific mitigation measures for protecting the sensitive receptors from construction related noise impacts include:

- Installation of signboards at prominent locations near the sensitive receptor locations to provide awareness to the project workers and drivers about the proximity of sensitive receptors to the project sites and to encourage them taking necessary measures for reducing noise.
- Blowing of horns by construction machinery and vehicles will be strictly prohibited.
- Works will be restricted to daylight hours as far as possible and noisy works will be avoided / minimized during the night time.
- All the equipment and machinery used during construction phase will be well maintained and in compliance with SEQS.
- Earliest resolution of any noise related public complaints registered through Project's Grievance Redress Mechanism.

Solid Waste Management - Generation of Excavated Material, Kitchen Waste, Old Asbestos Pipes

a) Impacts

- During construction phase the major waste streams will mainly include excavated material from construction sites and domestic wastes produced by workers.

- During excavation activities, Asbestos Cement (AC) pipes may be recovered that could either be abandoned or in use by the current water / sewerage network in Katchi Abadis.
- Estimated quantities of major waste stream to be generated during the construction phase includes the following;
  - 594,000 m^3 of Excavated Material
  - 110 kg / day of Domestic Waste

Mitigation Measures

- A waste management plan will be developed by the Contractor prior to the start of construction. The plan will cater sorting and storage of hazardous and non-hazardous materials prior to disposal, placing of waste bins at the project sites for waste disposal and an onsite hazardous waste storage facility i.e. designated area with secondary containment. The plan will also include specific measures to handle and manage sewage induced excavated material and AC pipes generated due to sewer pipelines laying works.
- Licensed and SEPA approved waste contractors will be engaged to dispose-off all hazardous and non-hazardous waste materials that cannot be recycled or reused including, wet sewage induced excavated material and AC pipes etc. (if found during excavation).
- Fuel storage areas, hazardous material storage areas, and generators will have secondary containment in the form of concrete or brick masonry bunds. The volume of the containment area will be equal to 120% of the total volume of fuel stored.
- Domestic waste from the camp will be disposed of in the nearest SSWMB waste disposal bins.

Untreated Disposal of Effluent from Worker Camps

a) Impacts

Generation of domestic effluents such as from the toilets, washrooms and the kitchen areas is expected mainly from the campsites at Sherpao and Muslimabad Colonies where around 36 km of sewerage and water pipelines will be laid in each colony. The effluent could harm the environment if it is not treated properly prior to disposal.

b) Mitigation Measures

- The Contractor will ensure that no untreated effluent is released. A closed sewage treatment scheme including soak pits and septic tanks will be constructed to treat the effluent from the construction/labor camp.
- Soak pits will be built in absorbent soil and will be located 300 m away from any nearby water wells, bores or hand pumps.
- It will be ensured that the soak pits remain covered all the time and measures are taken to prevent entry of rainwater into them.
- In case the septic tank gets filled with sludge, it will be emptied through vacuum truck and after getting approval from KWSC, the removed effluent will be transferred to the approved municipal drain.

Impacts Associated with Construction of Overhead / Underground Tanks and Pump Rooms

a) Impacts

- The impacts related to the construction of overhead / underground tanks and pump rooms are characterized as of low significance as these works will be limited to specified areas.
- Impacts may include temporary and limited disturbance to nearby communities due to the transportation of construction material and chlorination equipment and noise from power generators.
- Limited construction staff will be working during day time only at each of the pump houses for civil and installation works.

b) Mitigation Measures

- Worksites will be properly barricaded; workers will strictly follow the Code of Conduct and avoid any contacts with local communities.
- Power generators will be properly tuned and equipped with soundproof canopy.
- Transportation of construction material will be performed with minimum nuisance, preferably in the evening or night when there is less traffic on roads to avoid congestion.
- Where workers are required to work at height during OHT or UGT construction, appropriate fall protection systems such as safety nets or guardrails will be in place to prevent falls. Workers will be equipped with appropriate personal protective equipment (PPE) such as safety harnesses, hard hats, safety glasses, and safety shoes. PPE should be inspected before each use to ensure it is in good condition.

Improper Site Restoration

a) Impacts

In case the temporary sites such as campsites are not restored in appropriate manner, the area will not regain its value and function. Inappropriate restoration of sites could lead to nuisance to the public and users due to damaged site conditions, debris, dismantled material, spoils, excess construction materials etc.

b) Mitigation Measures

Following are the main activities envisaged for removing all part of the facilities and restoring the intervened areas:

- Dismantling and full removal of worksite facilities and camps, including worker rest areas, storerooms, drinking water utilities, temporary materials stockpiling enclosures etc.
- Removal of drinking water facilities, including pipes and storage tanks, as well as sanitary facilities, i.e., sewage network and toilets.
- Removal of electric facilities, including electrical posts and wiring.
- Removal of fencing, anchoring and other minor facilities, concrete left over from mixing etc. after all the movable elements have been removed.

- Ground cleaning will be done by removing all the affected topsoil and handing it over to authorized waste handlers.
- Addition of topsoil where necessary.

Community Health & Safety

a) Impacts

Communities could face the following health and safety risks of construction activities:

- Nuisance due to dust and noise.
- Restricted access to sensitive receptor locations.
- Chances of fall into unprotected excavations.
- Poor storage of materials, equipment and other obstructions in public areas, including inadequate control of waste materials, are also common causes for slips, trips and falls.

b) Mitigation Measures

- Contractor will prepare Community Health and Safety Plan based on construction methods, site specific hazards and framework provided in this Chapter.
- Construction areas including trenches, excavations, holes and obstructions will be properly barricaded and marked with warning tapes.
- Off-site stacking of material will be avoided to the maximum possible extent. In case it is unavoidable, stacking areas will be positioned away from public access with adequate posting of warning signs.
- Excavated material will not be piled next to the trenches and excavations for long periods will be removed from site on a frequent basis.
- Excavations and trenches will not be left open for long and be reinstated as soon as the work in that particular section is completed.
- Site supervisors will be trained to keep a watch on people, especially kids trying to enter the construction area and restrict them crossing the site unnecessarily.
- The entrance, access routes to the construction areas and any obstructions will be clearly signposted.
- Adequate lighting will be installed at excavated areas and trenches to keep them well-lit and prominent during the night for the sake of workers as well as public safety.
- Contractors will ensure that all the vehicle drivers and equipment operators have valid licenses and proven competency to safely operate vehicles and equipment in populated areas.
- Following measures will be adopted for minimizing the nuisance caused by dust and noise to the public:
    - Use of noise suppression on equipment;
    - Use of low-dust producing construction techniques;

- Use of water sprinkling for dust suppression;
- Work at times when the public are less likely to be in the area;
- Provision of solid barriers adjacent to public areas and sensitive receptors where possible.

- Contractors will provide safe pedestrian walkways at the identified sensitive receptor locations to allow safe entry and exit to the visitors.
- The walkways provided will be maintained to a standard suitable for use by women, children, elderly, patients and disables.
- The walkways will be properly barricaded, where necessary provided with guardrails and made prominent by installing signs and reflective tapes.
- Sign boards will be placed at appropriate locations to warn the public about construction activities and the associated risks
- Community liaison will be maintained. Community awareness will be raised about the construction related risks. Awareness will be provided to nearby communities through FGDs and public consultations regarding possible effects of dust on people suffering from respiratory diseases and ensuring Contractor's support in transporting emergency cases to hospitals through ambulance service.
- Contractor will make sure that contacts with emergency ambulance services are established and in case of emergency, ambulance is readily available for transporting affected community members to the nearest hospitals.

Labour Influx / SEA – SH – GBV Incidents

a) Impacts

- Influx of workers at project sites may pose a threat of communicable diseases, most common are Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS), COVID- 19, tuberculosis, pulmonary infections, typhoid, cholera and dysentery, malaria, rabies and other skin disease, hepatitis A, B and C, in case of not complying with adequate control measures.
- The influx of labor, seeking construction jobs can be associated with a series of social challenges such as crime, illegal drug abuse etc.
- In case larger numbers of labor will be employed from outside the project area, it may cause some antipathy among the local people and outsiders.

b) Mitigation Measures

- To avoid conflicts with local people on employment matters, the contractor will employ more locals in skilled, semi-skilled, and unskilled work. This will reduce pressure on resources such as residential and health facilities;
- The contractor will proactively manage the potential impacts from labor influx and potential cultural conflicts between local communities and workers through the following measures:
- Construction camps will be built at the designated areas;
- The Contractor's training program will cover topics related to respectful attitude while interacting with the local communities;

- ESS-4[13] guidelines on Influx of labour will be adhered to.
- Contractor will develop a Code of Conduct (COC) for all site personnel. All site personnel will sign this COC and abide by it.
- Contractor will ensure that project staff will receive training on the prevention of Sexual Exploitation, Gender Based Violence and Abuse (SEA) / Sexual Harassment (SH).
- Contractor will provide on-site anti-harassment training to create awareness of the harmful effects of GBV, as well as consequences if GBV occurs according to the anti-harassment policies.
- Construction crew will avoid entering settlements.
- Engagement of skilled trainers will be done to raise awareness among project workers of the risks, expected behaviours, and consequences of violations, communicated through training, and publicized codes of conduct.
- The Contractor will raise awareness of the risks among community members and local health authorities and inform them about available grievance mechanisms.
- Extensive training for awareness raising strategy which describes how workers and local communities will be sensitized to SEA and SH risks, and the worker's responsibilities under the COC.
- The routes/places used by the women will be avoided as far as possible. If unavoidable, alternate routes will be identified for the communities.
- COC for workers and employees will be enforced for the protection of local communities, gender based violence, other social issues, flora and fauna and a ban on tree cutting and hunting etc. Any violation of the COC will lead to strict punishment including termination of employment;
- Any employees will be terminated, who continues misconduct or lack of care, carry out duties amateurishly or inattentively, fail to conform to provisions of the contract, or persist in any conduct which is harmful to community, safety, health, or the protection of the environment;
- The use of drugs and alcohol will not be allowed at the work/construction site;
- Carrying weapons into the workplace premises will be prohibited;
- Site security arrangements will be ensured in line with Security Management Guidelines for Contractors (under ESS-4 guidance) are provided in this Chapter.
- Appropriate fencing, security check points, gates and security guards will be provided at the construction sites to record entry and exit of workers, staff and visitors;
- The Contractor will ensure that good relations are maintained with local communities and their leaders to help reduce the risk of vandalism and theft;
- PIU has prepared a Gender Action Plan for the entire KWSSIP. The relevant aspects of this Plan will be implemented for the proposed project.

[13] ESS4: Community Health and Safety – World Bank Environmental Social Standards Guidelines

Restricted Access

a) Impacts

The construction activities may block access to the sensitive receptors.

b) Mitigation Measures

- Contractor will leave space for safe pedestrian walkways at the listed sensitive receptor locations as listed under **Section 4.1.7** to allow safe entry and exit to the visitors.
- The walkways spaces will be maintained to a standard suitable for use by women, children, elderly, patients and disables.
- The walkways will be suitably barricaded, where necessary provided with guardrails and made prominent by installing signs and reflective tapes etc.

Construction Traffic Management and Safety

a) Impacts

Movement of construction traffic generally at main roads surrounding the Katchi Abadis could cause temporary nuisance to public.

b) Mitigation Measures

The Contractor will implement the following measures for effectively managing the construction traffic and public safety:

- Traffic Management Plan will be prepared as per the guidance before taking up any construction work and will be implemented after getting approved from the PIU / CSC.
- Barricades, signs, markings, flags, lights and flagmen will be deployed at key spots.
- The flagmen will be trained for traffic management and equipped with red and green flags and lights.
- Emergency response plan will be prepared for any traffic accident during construction.
- In case of community related accident, compensation will be paid in accordance with Fatal Accidents Act 1855.

Inadvertent Damage to Existing Infrastructure and Utilities

a) Impacts

Inadvertent damage to existing infrastructure and utilities is possible during the laying of water and sewerage pipeline networks in Katchi Abadis. The laying of new pipelines involve excavation and digging activities, which can pose a risk to pre-existing infrastructure such as gas lines, telecommunications systems, and other utility networks.

b) Mitigation Measures

The Contractor will ensure the following measures to avoid inadvertent damage to existing infrastructure and utilities:

- **Conducting Utility Surveys:** Before commencing any excavation work, utility surveys will be carried out to identify the location of existing infrastructure and utilities.
- **Collaborating with Utility Providers:** Contractor will establish clear communication channels with utility providers to gather accurate information about the location and depth of underground infrastructure. Project plans and timelines will be shared with them to ensure coordination and minimizing the risk of damage.
- **Marking Underground Utilities:** Locations of underground utilities will be clearly marked using visible markers or flags to ensure that construction activities are carried out with caution in areas where utilities are present.
- **Training Staff and Workers:** Contractor will provide training to staff and workers involved in the project about the importance of utility safety, proper excavation techniques, and the use of equipment to prevent damage. Contractor will ensure adherence to safety protocols.
- **Implementing Safe Digging Practices:** Workers will follow best practices for safe digging, such as hand digging especially is narrow streets and avoiding excessive force during excavation to prevent accidental strikes on utilities.
- **Engaging the Local Community:** Contractor will keep the local communities Informed and engaged about the construction activities. Communities will be encouraged to report any damages to their utilities or infrastructure through the project's GRM.

Stakeholders Concerns and Engagement

a) Impacts

The identified stakeholders may have different types of stakes associated with various aspects of the project depending on their professions, affiliations, and involvements.

b) Mitigation Measures

- Stakeholder Engagement Plan for the KWSSIP-2 will be followed to prepare Project specific Stakeholder Engagement Plan at the time of implementation.
- PIU, CSC and Contractor to ensure public consultations and participation of stakeholders throughout the project lifecycle. This would ensure that concerns about the impacts of the project are addressed at the right time.
- Stakeholder engagement to be carried out in a meaningful and inclusive way, providing access to remedy.

Operational Phase Impacts

Screening of potential impacts during the operational phase of the project is provided in **Table A5-3**.

Table A5-3: Screening of Possible Impacts during Operational Phase

No.	Potential Issue	Relevant ESS	Likelihood (Certain, Likely, Unlikely, Rare)	Consequence (Catastrophic,Major, Moderate, Minor)	Risk Level (Significant, Medium, Low)	ResidualImpact (Significant, Medium, Low)
1.	Handling of Sodium Hypochlorite / OHS Management during Cleaning of Sewerage Network	ESS2: Labor and Working Conditions	Unlikely	Moderate	Low	Low

Critical Risk Level

Significant Risk Level

Medium Risk Level

Low Risk Level

Handling of Sodium Hypochlorite / OHS Management during Cleaning of Sewerage Network

a) Impacts

- The proposed hypo-chlorine dosing system at Katchi Abadis water supply pump rooms involve the use of Sodium Hypochlorite for disinfection. If handled improperly, the vapours of Sodium Hypochlorite may irritate the respiratory system and causes burns to the skin and eyes on contact. Though Sodium Hypochlorite is not combustible but is a strong oxidizer which enhances the combustion of other substances.
- Sanitation workers involved in the cleaning and maintenance of sewerage network in Katchi Abadis can be exposed to Hydrogen Sulphide (H2S) when cleaning.
- Sanitation workers dealing with sewage may be at increased risk of becoming ill from waterborne diseases

b) Mitigation measures

PIU – KWSSIP will prepare OHS Management Procedures based upon the following mitigation measures and Pump Room In-Charges to implement throughout the operational phase:

- The chemical storage area will be designated at the pump houses for safe storage of sodium hypochlorite and it will be equipped with proper ventilation arrangements.
- Containers will be labelled, and Safety Data Sheet (SDS) will be posted at prominent locations.
- Emergency contact numbers for calling Police, Ambulance and Fire Services will be posted at prominent locations of the pump rooms.
- Workers at the pump houses will be provided with hazard information and trainings on safe handling of Sodium Hypochlorite.
- Sodium hypochlorite will be stored at cool, dry, and dark place.
- Medical check-ups for workers engaged with sodium hypochlorite dosing and handling will be performed periodically.
- Essential PPEs of appropriate specifications such as Rubber Gloves, Protective Clothing, Safety Footwear, Headgear, Goggles, Face Shields and Respirators will be provided to the workers engaged with sodium hypochlorite dosing and handling.
- All selected pump rooms for intermittent chlorinators will be provided with CO2, Dry Chemical, Water and Foam Type Fire Extinguishers and all the staff will be trained for dealing with accidental fires.
- In case of Sodium Hypochlorite spills or leaks, following measures will be taken:
    - All potential ignition sources will be removed from the area and proper ventilation arrangements will be ensured.
    - Spilled or leaked chemical will be neutralized with Sodium Bisulphite, covered with Soda Ash and will be placed into covered containers for disposal.
    - The contained Sodium Hypochlorite will be considered as a Hazardous Waste and it will be handed over to SEPA certified hazardous waste management contractor.

- Regular trainings and orientation on safety practices will be implemented to impart knowledge of safe and efficient working environment.
- Proper housekeeping will be maintained at all pump rooms.

Sewerage Network Cleaning

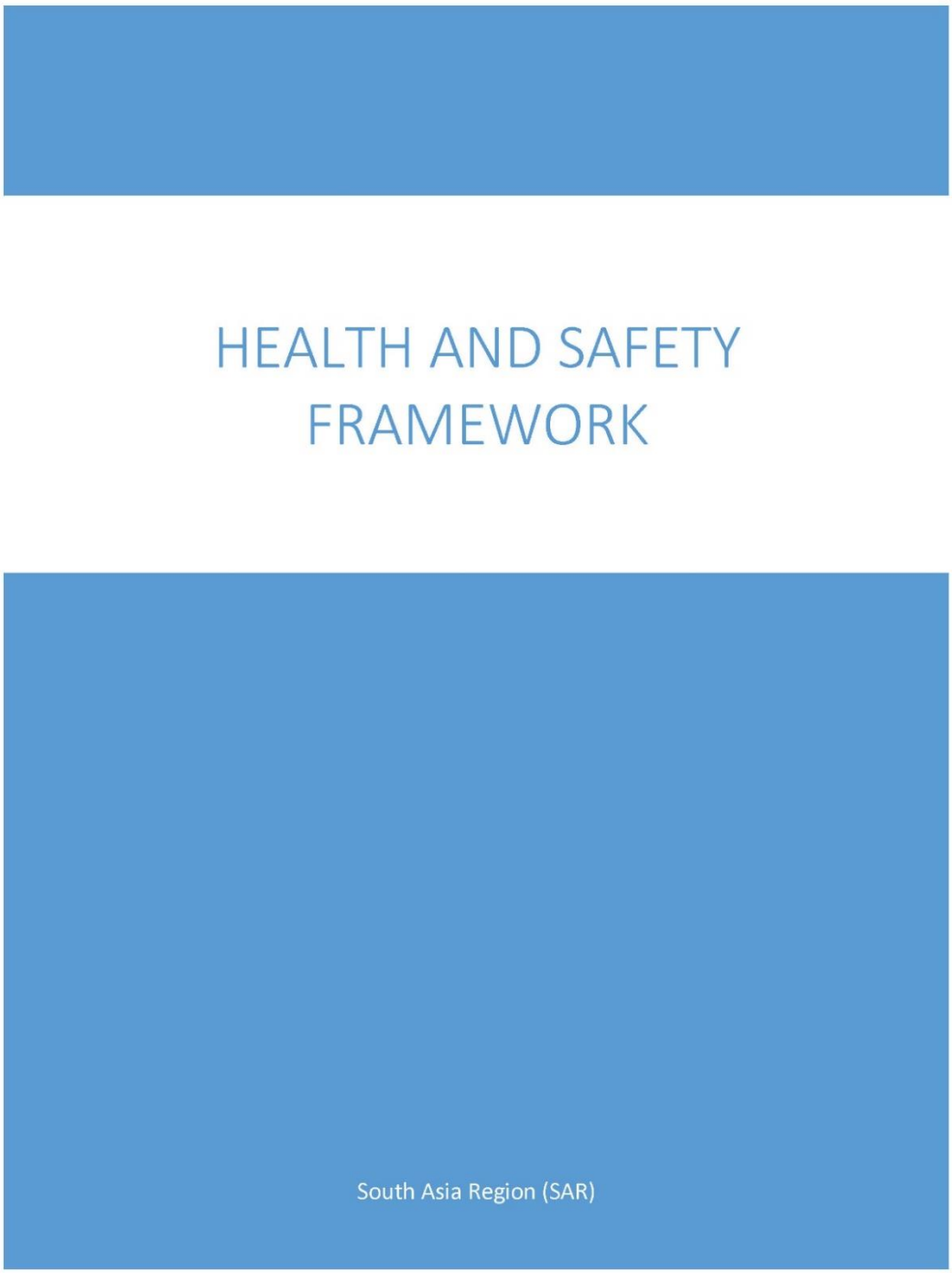
Sanitation workers involved in the cleaning and maintenance will be provided proper PPE, training in how to use it, and hand washing arrangements. Workers should wash their hands with soap and water immediately after removing PPE. The following PPE is recommended for workers handling sewage at the interceptor:

- Goggles: to protect eyes from splashes of human waste or sewage.
- Protective face mask or splash-proof face shield: to protect nose and mouth from splashes of human waste or sewage.
- Liquid-repellent coveralls: to keep human waste or sewage off clothing.
- Waterproof gloves: to prevent exposure to human waste or sewage.
- Rubber boots: to prevent exposure to human waste or sewage.

For protecting sanitary workers from Hydrogen Sulphide (H_2S) exposure, it is advised that only positive-pressure self-contained breathing apparatus (SCBA) or positive-pressure air-line units with an emergency egress bottle will be used in any known or suspected H_2S environment.

- Appropriate H_2S warning signs will be posted in immediate areas presenting potential H_2S exposure.

WB Health & Safety Framework – South Asia Region (SAR)



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1 Overview

Health and Safety is defined as the process of anticipation, recognition, evaluation and control of hazards arising in or from the workplace and the community that could impair the health, safety and well-being of workers, considering the possible impact on the surrounding communities and the general environment. The Health and Safety Framework outlines the management of workplace and community hazards and take appropriate preventive measures to make workplace and community safer and healthier.

2 Purpose

This document is a framework for the Borrower to implement a practical approach to manage Occupational Health and Safety (OHS) and Community Health and Safety (CHS) impacts and risks in accordance with national/local regulatory framework, the World Bank Environmental and Social Standards and Environmental Health and Safety (EHS) Guidelines, ISO Standards, Good International Industry Practices (GIIP), etc. This framework document will be in accordance with the following:

- National laws including Acts, Regulations, Codes of Practice, Guidelines, etc. where the project is located.
- ESS2 – Labor and Working Conditions
    - The Borrower will develop and implement written labor management procedures applicable to the Project.
    - Measures relating to occupational health and safety will be applied to the project. The OHS measures will include the requirements of ESS2 and consider the General Environmental Health and Safety Guidelines (EHSGs) and, as appropriate, the industry-specific EHSGs and other GIIP.
    - The OHS measures will be designed and implemented to address, (a) identification of hazards, (b) provision of preventive and protective measures including method statements, safe work procedures, etc., (c) training of project workers, (d) documentation, reporting, and remedies of occupational incidents, (e) emergency prevention and preparedness and response arrangements to emergency situations, and (f) remedies for adverse impacts such as occupational injuries, deaths, disability and disease.
    - All parties who employ or engage project workers will develop and implement procedures to establish and maintain a safe working environment, including that workplaces, machinery, equipment and processes under their control are safe and without risk to health, including by use of appropriate measures relating to chemical, physical and biological substances and agents. Such parties will actively collaborate and consult with project workers in promoting understanding, and methods for, implementation of OHS requirements, as well as in providing information to project workers, training on occupational safety and health, and provision of personal protective equipment without expense to the workers.
    - Workplace processes will be put in place for project workers to report work situations that they believe are not safe or healthy, and to remove themselves from a work environment which they have reasonable justification to believe presents an imminent

and danger to their life or health. Project workers will not be retaliated against or otherwise subject to reprisal or negative action for such reporting or removal.

- Project workers will be provided with facilities appropriate to the circumstances of their work, including access to canteens, hygiene facilities, and appropriate areas for rest.
- A system for regular review of occupational safety and health performance and the working environment will be put in place and include identification of safety and health hazards and risks, implementation of effective methods for responding to identified hazards and risks, setting priorities for mitigation actions, and evaluation of results.
- Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) reporting, prevention and management in the workplace must be addressed in the project health and safety management plan and in the labor management procedures.

- ESS4 – Community Health and Safety (CHS)
  - The Borrower will develop, implement and review/update (as required) a CHS Management Plan or CHS Management measures which will be included in the Environmental and Social Management Plan (ESMP) applicable to the Project.
  - Conduct risk assessment to identify and assess the risks and prevent their adverse impacts on the health and safety of project-affected communities during the project life cycle from both routine and nonroutine circumstances.
  - Implement appropriate control measures to avoid or minimize community exposure to project-related traffic and road safety risks, diseases, and hazardous materials.
  - Ensure the safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities.
  - Ensure appropriate community emergency preparedness and response plan is available and communicate to all stakeholders to address emergency events.
  - Community engagement, communication and reporting processes shall be developed and implemented for community members to report health and safety incidents, incidents (including complaints) must be investigated appropriately, and action plans implemented and communicated to the community.
  - The Borrower will promote quality and safety, and considerations relating to climate change and natural disasters, in the design and construction of infrastructure projects, including dams.
  - SEA/SH reporting, prevention and management for local communities must be addressed in the project health and safety management plan.

- World Bank Group Environmental Health and Safety Guidelines (EHSGs), 2007.
- International Labour Organization (ILO) Code of Practice: Safety and Health in Construction Industry, 1992.
- ILO Codes of Practice: Safety and Health in Building and Civil Engineering Work, 1972.
- International Organization of Standardization (ISO) Standards. Examples include 45001 - Occupational Health and Safety Management Systems, ISO 4007 – Eye and Face Protection, ISO

20345 – Safety Footwear, ISO 3873 – Industrial Safety Helmets, ISO 20345 & ISO 16024 – Fall Protection.

- Good International Industry Practices (e.g., UK HSE Executive, Safe Work Australia, US OSHA, Global Reporting Initiative (GRI)).

3 Scope

The Health and Safety Framework is applicable on all World Bank-financed projects in the South Asia Region (SAR).

4 Implementation of the Health and Safety Framework

The implementation of this framework should adopt a risk-based approach when applying to the World Bank-financed projects. It is critically important that the project conducts impact/risk assessments (environmental, social and health & safety) to identify and assess impacts and risks both in the workplace and in the community.

For OHS impacts and risks, the Borrower shall develop and implement a Health and Safety Management Plan (HSMP) to manage OHS impacts/risks. The detail and comprehensiveness of the Project HSMP should be based on the risk and not on the size of the project or types of contracts (ICB, NCB, etc.). All projects are required to have a HSMP that includes all elements of this framework (e.g. policy, organization, emergency management, etc.). In large (mega) projects where the risk assessment identified multiple significant risks (substantia/high), it is advisable that the Contractor (or Subcontractor) prepare and implement H&S sub plans to manage these risks and will be included in the annex of the Project HSMP. A Project HSMP Plan template is provided in Annex 1.

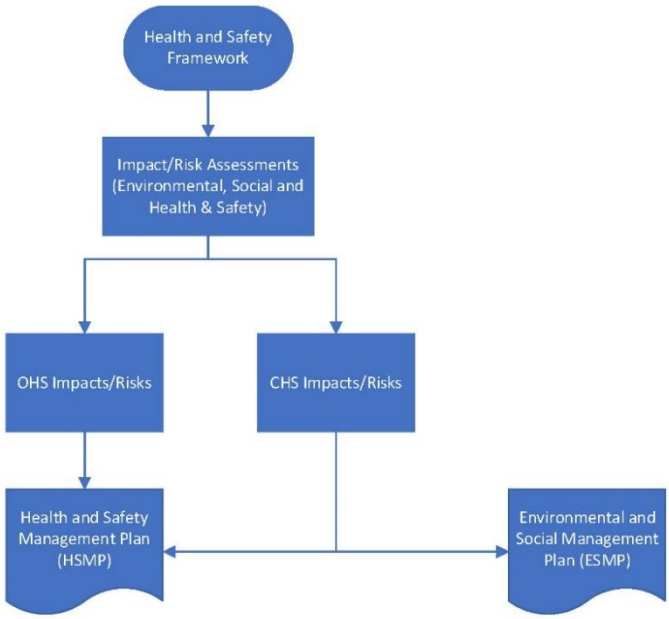
The Borrower is responsible for the project and shall ensure that this Health and Safety Framework is applied. The Borrower can delegate/assign the PIU or Contractor to develop and implement a HSMP to address the Health and Safety Framework requirements and to manage health and safety impacts and risks at the project operational level.

For CHS impacts and risks, the Borrower shall address and manage CHS impacts/risks under the Environmental and Social Management Plan (ESMP) and to some extent in the Health and Safety Management Plan (HSMP).

In some situations, there may be overlapping of the management plans due to project activities impacting both the workers and local communities. For example, road construction projects have significant impacts to workers and local communities and will require robust plans to manage OHS and CHS risks.

The Health and Safety Framework implementation flowchart is provided below (Figure 1).

Figure 1. Health and Safety Framework Implementation Flowchart



Note: CHS impacts and risks may overlap both management plans (HSMP and ESMP) in some projects, e.g. road construction (traffic management plan) will impact both workers and the community.

The Health and Safety Management Plan (HSMP) is the key tool to manage health and safety risks and impacts associated with the Project. Its core purpose is to ensure that all activities are planned, carried out, controlled and directed with consistent, approved, health and safety management practices, procedures or standards.

The HSMP should be applied as a living document and undergo routine review and updates when any of the following happens:

- There is a change in the scope of the project, or
- There is a change in construction methodology/technique based on site condition, or
- Following a major incident/near miss, or
- New or emerging health and safety risks (e.g. disease pandemic), or
- Change in local legal/regulatory requirements, or
- At the end of the Project (to allow for improvements in subsequent projects).

The PIU/Contractor is responsible for the review and update of the HSMP and communicate with relevant stakeholders (e.g. workers, subcontractors, suppliers, local communities, etc.).

In addition, the Contractor/Sub-Contractor can also prepare, submit and implement H&S sub-plans, procedures or SOPs to address specific work activity hazards either as a separate document or as part of the HSMP.

There should be one overall project HSMP that outlines the management of health and safety risks. Do not duplicate efforts by having multiple Health and Safety Plans for contractors, subcontractors, suppliers, etc.

5 Health and Safety Management Strategy - Working Together for Success

The responsibility for safety cannot be "delegated" to the "OHS Officer or Manager". The OHS staff of the PIU and/or Contractor support line management by assisting in jobsite training, serving as trained and knowledgeable observers, providing administrative assistance, monitoring and evaluating the success of the safety program and acting to continuously improve this plan. While this role is important, commitment and active participation by everyone, every day, on every task, is necessary if the PIU and Contractor are to achieve the level of health and safety excellence, both in the workplace and in the community, that the Borrower expects.

6 Health and Safety Management System

The PIU/Contractor management goal is to aspire Zero Harm to all workers and the community members while carrying operational activities. To achieve this goal, the PIU/Contractor shall prepare a HSMP in accordance with the minimum expectations in line with the policies, standards and best practices noted in this framework (e.g. ESS2 & ESS4, ISO, GIIP, etc.). The HSMP is an overarching health and safety management system for the project. All 15 elements of this framework must be included in the HSMP. In addition, safe work processes and procedures (e.g. Work Statements, SOPs, Work Instructions, etc.) must be developed and implemented for complex and high-risk activities. For example, Operational Control is one of the key elements, and it is expected that in high-risk work activities (e.g. crane lifting, tunnelling, etc.) the Contractor must develop and apply SOPs/Safe Work Procedures to operate safely.

The Health and Safety Management System is designed on the principles of continual improvement and adopts the methodology of Plan, Do, Check and Act (PDCA) (Figure 2). The structure of the management system generally follows the layout of common international standards such as the ISO 45001 and OHSAS 18001 where key elements of the system are aligned to PDCA.

d) Establishing measurable objectives and targets for improving OHS CHS performance.
e) Providing the resources needed to meet OHS/CHS performance objectives.
f) Encouraging worker participation and promoting awareness of OHS/CHS risks and opportunities.

The PIU/Contractor shall establish project specific measurable targets to achieve above mentioned objectives. The determination of these targets is based upon the drive for continuous improvement, external peer group benchmarking and stakeholders' input.

7.2 Element 1 - Human Rights Policy

The Borrower's human rights policy should have focus on the responsibility to respect human rights and play a positive role in the communities where they operate. To this end, the Borrower (PIU/Contractor) should commit to respecting human rights as set out in the United Nations Universal Declaration of Human Rights and the International Labour Organization (ILO) Declaration on Fundamental Principles and Rights at Work, as well as adhere to the United Nations Guiding Principles on Business and Human Rights, the Voluntary Principles on Security and Human Rights and the World Bank Environmental and Social Standards (ESS) 2: Labor and Working Conditions.

The Borrower (PIU/Contractor) must continually assess the human rights context of their activities, including impacts that they may cause and those to which they may contribute or be directly linked. This determines the prevention, mitigation and control measures required, including using leverage from their business relationships.

The Borrower (PIU/Contractor) should recognize, respect and abide by all project workers, community worker, and employment laws and expect their subcontractors and other third-party companies to meet the same standards. No child or forced labor and discriminatory behavior is allowed under the project/program – by the contractors or sub-contractors or primary suppliers.

The Borrower (PIU/Contractor) should value and respect the traditions, diversity and the culture of different communities in the project area where they do business.

The Borrower (PIU/Contractor) should recognize the effect that their activities may have on local communities, and they should strive to engage in a meaningful way with the communities where they do business to help ensure that they positively contribute to the welfare of the local communities.

The Borrower (PIU/Contractor) preferably should endeavor to conduct business with communities who share their values and business principles.

7.3 Element 2 - Legal and Other Requirements

All applicable OHS/CHS legal requirements such as national laws and regulations, World Bank ESS2 & ESS4, etc. must be identified, evaluated for compliance and documented in a project legal register.

The project legal register must:

a) Define accountability for maintaining compliance or conformance to each requirement.
b) Be reviewed regularly for currency, and expiry/renewal dates.
c) Include or provide reference to records that show periodic evaluation of compliance.
d) Include relevant legislative obligations (international, federal, state/provincial, regional or local).

e) Include relevant Borrower policies and standards and external voluntary commitments.
f) Include any other requirements, such as license, codes of practice and product quality obligations.
g) Be accessible to the relevant personnel and stakeholders.

Any new/periodic changes or updates must be communicated to relevant stakeholders.

7.4 Element 3 - Risk Assessment

Risk assessment involves hazard identification and risk management, which are core activities to manage OHS/CHS risks and performance. The objective is to ensure OHS/CHS hazards are timely identified, and their resulting risks to people, property, assets and the environment are evaluated and managed.

A risk assessment is a critical examination of health and safety hazards at a project worksite and to ensure the PIU/Contractor to implement corrective measures to protect workers from health and safety hazards in the workplace.

A community health and safety risk assessment is required to identify, assess and manage for all World Bank financed projects. It is critically important that community health and safety impacts resulted from the project be identified and managed to ensure that the project social license to operate will not be impacted.

The process for analyzing and managing OHS/CHS risk includes:

a) Establishing the context, including acceptability criteria for the risk analysis.
b) Hazards identification to determine risk scenarios and select a suitable level of risk evaluation.
c) Risk estimation outcome and assigning risk ownership.
d) Recording the risk analysis in a risk register.
e) Managing risks according to their classification of either High, Substantial, Moderate, and Low to achieve levels that are deemed to be As Low As Reasonably Practicable (ALARP).
f) Utilizing the hierarchy of control:
    - Elimination of the hazard;
    - Substitution with less hazardous materials, processes, equipment, etc.;
    - Use engineering and process controls;
    - Apply administrative controls or management strategies; and
    - Use of personal protective equipment (PPE).
g) Developing and agreeing on further actions or monitoring of the risks, considering the hierarchy of controls.
h) Verifying the completion of actions.
i) Re-evaluating the risk and classification as appropriate.
j) Reviewing and updating the risk register over time.
k) Documenting, reporting and communicating the risk information.

As noted in the framework implementation section, CHS impacts/risks will be addressed and managed under the ESMP and HSMP.

7.5 Element 4 – Health and Safety Improvement Planning

Establish processes and plans to manage performance and to provide for continual improvement. Objectives and targets must be established for the management of OHS/CHS performance. They must be measurable and contribute to the prevention of incidents or reduce their impact(s).

To enable objectives and targets to be met, improvement plans must be developed, documented and integrated into the overall project planning process.

OHS/CHS improvement plans must:

a) Specify the required resources (both human and financial/budget) needed to meet the objectives.
b) Specify role responsibilities for implementing the improvement plans and their actions.
c) Establish the timeframes for completion of the improvement plans and achieving the objectives.

Project Director, Project Manager, Construction Manager and/or Resident Engineer are fully committed to achieve the above-mentioned targets. Leading and lagging indicators should be established to drive performance to meet these targets.

7.6 Element 5 - Organizational Resources, Accountabilities and Responsibilities

Resources, responsibility and accountability is appropriately allocated for the implementation, maintenance and continual improvement of the Health and Safety Management Plan.

The PIU/Contractor shall establish committees with representatives of workers and management or make other suitable arrangement consistent with national laws and regulations (if available) for the participation of workers in ensuring safe working conditions. A Community Health and Safety Committee comprising of community members may be required under the ESMP/HSMP to address for CHS risks.

All roles with health and safety accountability and responsibilities (including regulatory requirements) must:

- Be documented in role descriptions; and
- Be included in the organization chart specific to the managed site. The organizational charts must be available to all workers and local communities.

Where subcontractors and suppliers are involved, these areas of accountability and responsibility must be clarified with respect to those contractors.

7.7 Element 6 - Training, Competency and Awareness

Processes are established to provide the requisite training, competency and awareness to effectively manage OHS/CHS impacts and risks. There must be a process for the delivery and maintenance of awareness and/or competence based training. Every worker shall receive instruction and training regarding the general safety and health measures common to the project site(s).

All new workers, contractors and/or visitors must undertake relevant safety training. At a minimum, safety induction/orientation training must include reference to the significant OHS/CHS risks identified at the managed site. No person shall be employed in any worksite unless that person has received the necessary

information, instruction, and training to be able to do the work competently and safely. All training must be recorded and documented.

All roles requiring technical certification, registration or licensing are verified and documented. The requisite qualifications/competencies must be maintained for all personnel performing such roles and their associated work activities.

There must be a process to communicate and engage with local community members on CHS impacts and risks. Awareness communications, training and outreach should be conducted throughout the life of the project.

7.8 Element 7 - Contractor and Supplier Management

OHS/CHS risks associated with procured materials, equipment, services and labor are effectively managed.

There must be a process to identify and evaluate risks associated with the planned procurement of materials, equipment, services and labor. This must include an analysis of any downstream implications which may be impacted by the selection. This process must be supported by a written procedure that specifies the criteria for contractor/supplier selection, evaluation and re-evaluation and the rejection of product(s) or material(s).

Individuals engaged on a temporary or casual basis to work within existing managed sites are to be inducted and managed in the same way as permanent staff. There must be a process to ensure all contractor tools and equipment are inspected and evaluated to be in a safe condition and conform to the site's standards and procedures.

7.9 Element 8 - Communication and Consultation

There must be a process to encourage the participation of workers, contractors and community members in activities which promote improvements in health and safety performance. In particular, this must include their appropriate involvement in:

- Hazard identification, risk analysis and determination of controls.
- Incident investigation.
- The development and review of the health and safety policy and objectives.

Workers must be informed about their participation arrangements, including:

- Who is their representative(s) on health and safety matters?
- Time and resources necessary to participate in health and safety activities.
- Access to information that is relevant to current or planned health and safety improvement activities.
- The mechanisms to identify and remove obstacles or barriers to participation.
- Disciplinary actions for safety violations and non-compliances.

There must be a process for communicating about the management of OHS/CHS risks at the various levels of the managed site. This includes, but is not limited to:

- Internal communications to raise awareness about OHS/CHS risks, performance measures and changes or improvements.
- Pre-start meetings or briefings (e.g. toolbox talks) for sharing safety observations/ experiences, lessons learned or raising awareness about OHS/CHS risks.
- Sharing knowledge and lessons learned from around the Project (external to the site, business or site); such as relevant incidents, hazardous conditions or suggested practices.

There must be a grievance process to receive feedback, suggestions and complaints on OHS and CHS matters. This process must include a procedure for documenting, evaluating, implementing (as appropriate) and archiving the improvements.

There must be a process to ensure that, when appropriate, relevant external stakeholders are consulted about pertinent OHS/CHS matters (including statutory and regulatory requirements) as needed.

Communications, engagement and consultation with local communities on CHS matters shall be addressed in the ESMP.

7.10 Element 9 - Operational Control

The Contractor is responsible to manage risks associated with the site's work activities. This shall be achieved by implementing operational controls, as well as other mandated or necessary risk treatment processes to control the risk to As Low As Reasonably Practicable (ALARP).

There must be a process for the development of procedures or work instructions that detail the controls required to treat risks associated with the work activities. These procedures must reference applicable operating criteria, be communicated, available to the appropriate users, and followed.

Plant and equipment must be maintained, inspected and tested to ensure they meet the design descriptions and specifications. All equipment or services provided by third parties, must be inspected, and have the controls verified to ensure the safe operation, and adherence to the health and safety performance objectives.

Where new or non-routine tasks and activities are conducted, the controls identified during the pre-task hazard assessment must be implemented.

Operational controls are health and safety controls designed to eliminate, mitigate or manage the risks/impacts. The Contractor shall develop and implement health and safety controls for risks identified by the project risk register. For example, if a project identified working at height, crane lifting and scaffolding as high-risk activities then the Contractor must develop and implement Working at Height, Lifting, Hoisting & Rigging and Scaffolding procedures incorporating the hierarchy on control concepts (i.e. elimination, engineering, safe work procedures and PPE) to manage these risks. By applying a risk based approach, the Contractor will need to develop and implement operational controls/procedures based only on the risk identified.

Table 1 below summarizes the types of health and safety controls/procedures generally found in civil construction projects. This list is not intended to be all-inclusive as there may be other high-risk activities in projects not listed here.

Table 1 – Health and Safety Controls/Procedures

OHS / Safety Rules (e.g., Golden Rules)	Permit to Work Systems
Excavations and Trenching	Fire Safety
Heavy / Mobile Equipment	Electrical Work / Safety
Barricading and Signs	Hazardous Material Management
Cell/Mobile Phone Use	Equipment Inspection & Maintenance
Safe Driving (Light Vehicles)	Dredging
Material Handling (Loading and Unloading)	Demolition
Traffic Interface Planning / Management	Confined Space
Severe Weather Management	Hot Work (Welding, Grinding, Cutting)
Lifting, Hoisting and Rigging	Hand and Power Tools
Scaffolding	Housekeeping
Work at Height	Lockout/Tagout (Isolation)
Working Near or Over Water	Ladder Safety
Illumination	Hazardous Waste
Ground Support	Fitness for Work (Health/Medical Surveillance)
Water Management	Personal Protective Equipment (PPE)
Tunnelling	Noise Hazard & Protection
Bulk Earthworks and Civil Works	Respiratory Protection
Steel Erection	Working in Heat / Cold
Pressurized Equipment	Manual Handling (Ergonomics) / Vibration
Clearing and Land Disturbance	Fatigue Management
First Aid	Travel and Remote Site Health
Project Worker Welfare Facilities	Animal Bites & Stings
Camp Management	Working Alone
Site Security Management	Radiation (Ionizing and Non-Ionizing)
Blasting and Explosives	Infectious / Communicable Disease (e.g. COVID-19)
Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) Reporting and Management	Other hazards/risks on project site identified through risk assessment

The Contractor shall ensure workers are trained, supervised and applied the required health and safety procedures on managed site.

7.11 Element 10 - Management of Change

There must be a procedure to identify and manage changes to the operational processes and controls that may impact on OHS performance. Changes may be planned or unplanned, sudden or gradual, and temporary or permanent. The procedure must include an analysis of the risks associated with a change and include a contingency to cover emergency situations where the full management of change procedure cannot practically be applied. These situations require the Resident Engineer / Project Manager (or his/her designated deputy) who is accountable for the managed activity to approve the change.

Workers and contractors must be trained to identify what constitutes a change and how to initiate the management of change process.

After completing the change, a formal review must be carried out to evaluate the actual impact against the intended impacts, and to identify the reasons for any deviation.

7.12 Element 11 - Emergency Management

To ensure that the appropriate resources and emergency response plans are prepared, practiced and available. The PIU/Contractor is responsible to develop and implement an Emergency Response Preparedness (ERP) Plan that will provide an effective response for the mitigation, control and recovery from incidents/ accidents including natural disasters which can impact or disrupt the project and/or its managed site(s) and activities.

The PIU/Contractor must clearly define accountability for the ERP and ensure it is adequately resourced. PIU/Contractor must also ensure that individual team members are provided with the relevant training for their required roles. The ERP exercise (drill) must be tested and validated annually. The ERP must be updated to reflect the lessons learned from the exercises and actual incidents.

The process for managing incident communications, notification and reporting must be integrated into the ERP and clearly:

- Identify who is responsible for incident communication, notification and reporting.
- Define how communication protocols are to be conducted with internal and external stakeholders.

The ERP must include local communities during emergencies including natural disasters when the risk and impact assessments identified potential aspects/impacts caused by the project.

7.13 Element 12 - Measuring and Monitoring

The objective is to monitor risks and impacts of the work activities and evaluate the effectiveness of the operational controls. There must be a process for measuring and monitoring the key characteristics of the managed site and its work activities that may have significant OHS/CHS risks. Measuring and/or monitoring can be either qualitative or quantitative but must follow a standardized methodology.

Procedures for measuring and monitoring occupational health exposure and environmental impact must conform to national laws and other international standards that are stated in the contract. Exceedances from specified requirements or limits must be recorded, investigated and reported back to the worker, work area or the community involved. The appropriate actions in response to the exceedance must be recorded, assigned accountability and tracked to completion.

Medical/Health Surveillance

Any medical/health surveillance program must:

- Include project personnel and contractors.
- Be consistent with local regulatory requirements.
- Be designed based on the identification and evaluation of operational health risks.
- Support the project and site's objectives and targets.

7.14 Element 13 - Incident and Action Management

All incidents including near misses must be reported, investigated and corrective actions identified, implemented and communicated. There must be a written procedure for incident management including investigation, reporting and corrective action(s) to prevent recurrence. It must include reference to the appropriate methodologies for:

a) Reporting.
b) Investigating.
c) Analysis of the impact(s) and the potential risk of future incident.
d) Communicating to relevant people/stakeholders.
e) Managing corrective actions to prevent reoccurrence.

The Resident Engineer/Project Director is responsible for all incidents that occurred in the project, and the Site Manager/Supervisor of the involved person(s) must ensure that incident is reported and investigated.

Incident investigations must be completed by competent investigators who have been trained in the appropriate investigation methodology.

All significant incidents must be summarized for lessons learned after the investigation and communicated to all workers and relevant stakeholders.

Community health and safety incidents caused or impacted by the project must be reported, investigated and corrective actions identified, implemented and communicated to the community.

7.15 Element 14 - Performance Assessment and Auditing

A process must be developed for measuring OHS/CHS performance. Metrics must include leading and lagging indicators and be based on qualitative and quantitative data.

Performance must be measured on a regular basis and include an evaluation of:

- the extent to which objectives are being met;
- progress against targets;
- the effectiveness of controls;
- proactive conformance measures; and
- reactive or historical performance measures.

The Contractor should provide a monthly report summarizing the OHS/CHS performance and contain details or summaries of all incidents and progress against corrective actions. The report must be sent to the Project Management Team, the Borrower and other relevant stakeholders.

<u>Audits and Inspections</u>

There must be a process for conducting audits and regular inspections of all work areas including those areas/sensitive areas where there is a potential concern for local communities. The process must include a written procedure, where relevant, to define the scope and depth of audit/inspection and consider:

a) The level of evaluated risk associated with specific activities that the project or site undertakes.

b) The identification of non-conformances with health and safety procedures and the HSMP requirements.
c) The identification of hazards and impacts in the project risk register.
d) Compliance to legal and other requirements as identified and recorded in the legal register.
e) The results of previous audits and inspections.

At the completion of the audit and inspection, a report must be provided to the Resident Engineer/ Project Director, Site Manager and the Supervisor responsible for the work area.

The Project and/or managed site must define an annual schedule of planned audits. The schedule must be developed, based on an evaluation of significant OHS/CHS risks associated with the project or site and the results of previous audits. The audit should be conducted by external third party. Corrective actions to address non-conformance must be assigned and tracked until completion.

7.16 Element 15 - Management Review

The HSMP must be reviewed bi-annually at a minimum. The review must evaluate any need for change and establish actions to improve the HSMP, its processes and resource needs.

Records of completed management review(s) must be retained and include:

a) Decisions and actions relating to possible changes to policy, objectives and targets.
b) Information relating to revised risks and any proposed treatment and controls.
c) Improvement suggestions (including the community) for inclusion into future management plans.
d) Any other alternation, modification and improvement to the HSMP that demonstrates a commitment to continual improvement.

Relevant outputs from the management review(s) must be made available for communication and consultation throughout the project/managed site, the Borrower and relevant stakeholders.

Annex 1 - Health and Safety Management Plan (HSMP) Template

Project title

Effective Date	xxxxxx	**Status**	DRAFT
Version Number	xxx	**Document Number**	xxxxxx

Health and Safety Management Plan

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Health and Safety Management Plan

About the Project Health and Safety Management Plan template

The Project Health and Safety Management Plan (HSMP) is a key document to address the Health and Safety Framework requirements of how OHS and CHS risks will be managed in a project. The HSMP incorporates the 15 elements of the framework to which the Borrower (PIU/Contractor) must address for the project.

Under the Health and Safety Framework, it is mandatory that each project to develop and implement a Project HSMP that identifies the hazard, assess the risk and implement control measures to eliminate or reduce the risk.

The purpose of the Health and Safety Management Plan is to:

- Clearly and succinctly communicate how significant risks in the project will be managed;
- Ensure key requirements including legal / regulatory obligations are considered and met;
- Provide requirements on health and safety standards, procedures and guidelines; and
- Outline how the implementation of the HSMP will be evaluated.

Project personnel and contractors must have access to the HSMP. They should understand it (as it relates to their role) and implement it in their work area, relevant to the hazards encountered by each role.

If a project is subjected to local government regulators management plan template(s), then those templates must be used. Do not duplicate effort.

The Project HSMP should be considered live and dynamic during each stage of the project life cycle. It is recognised that project risks and how they will be managed can change during the life of a project. If the HSMP changes, it must comply with Health and Safety Framework's management of change requirements (Element 10).

This template should be suitable for any project (type and size) with some modifications as required. Additional sub sections may be added as required depending on the size, complexity and risk of the project.

Finally, the Resident Engineer and/or Project Director must determine and justify how this template is to be applied to each project (e.g. a single Plan covering the entire project, or individual Plans or Sub-plans for each work package area, or sub-contractor).

Note: As stated in the Health and Safety Framework, CHS impacts, and risks are addressed in the ESMP. There may be overlapping of CHS and OHS in both the HSMP and ESMP such as road construction where significant risks are found both in the workplace and in the community. In such instances, the Contractor must ensure the HSMP and ESMP requirements are implemented and enforced.

Health and Safety Management Plan

Project title

1 Introduction

1.1 Overview

Describe the purpose of the Project HSMP (e.g. Health and Safety Framework and/or local legal requirements), intended audience (stakeholders), issuance, etc.

1.2 Change Authority

Describe the management of change for any future changes to this HSMP and who can authorize it.

2 Project Description

Provide the project background and scope including the project stage and the activities to be undertaken. Provide brief description of people involved in project (employees, contractors, sub-contractors, suppliers, etc).

3 Objectives

Set out the health and safety objectives and should include Key Performance Indicators (KPIs) to achieve these objectives.

Include any assumptions/ constraints made in the objectives or project scope.

4 Health and Safety Values

4.1 Health and Safety Policy Statement

Insert the Project Health and Safety Policy and/or Contractor Policy (if available) statement.

4.2 Message from Project Leader

Provide an overall vision, values and conduct and behavior expectations from the Resident Engineer or Project Director.

If this template is used by contractors, then the Contractor Director/Manager will address in this space.

5 Health and Safety Organization

Having the appropriate organizational structure and people are essential for the success of a project. Clearly identify and describe the organization structure and people who will be responsible for the management of the project's OHS/CHS risks and compliance to this Plan and other legal requirements. Health and Safety accountability and responsibility must be documented in the role descriptions.

5.1 Team Structure

Short description/ chart of personnel responsible for health and safety management and supervision.

5.2 Roles and Responsibilities

Short description of health and safety roles and responsibilities include the project management team.

Health and Safety Management Plan

6 Legal and Other Requirements

Provide a summary of all the legal obligations with a short description of the main requirement(s) under each obligation (e.g. *Labour Act, Work Bank ESS2 & ESS4, etc.)*.

A Project legal register form is provided in Annex 1.

7 Hazard Identification and Risk Management

7.1 Project OHS / CHS Significant Risk Summary

Describe the process of how the Project Risk Register was achieved including the name of the facilitator and participants (e.g. project team members, health and safety staff and contractor representatives) and when it was undertaken.

Insert a brief bullet point summary to outline the key significant **inherent** risks (i.e. substantial and high). Follow a format like this: *the impact arising from a defined hazard due to a specific activity* e.g. "respiratory disease due to the inhalation of respirable crystalline silica during underground drilling".

Provide details of all significant inherent risks for the project showing current controls in Appendix 1. The significant inherent risk register is a subset of the comprehensive risk register for the project.

Community health and safety (CHS) risks must be identified, assessed and documented in the Project Risk Register. The management of CHS risks will be addressed in the ESMP but can may overlap with the HSMP For example, road construction projects will impact both workers and local communities. In this situation, a traffic management plan may be included in the both the HSMP and ESMP as operational control.

7.2 Health and Safety Operational Control

This section outlines how the key significant risks for the project (as defined in Section 7.1) will be managed. At a minimum, the project current controls must comply with the Health and Safety Framework and other legal requirements.

This is the most important section of the HSMP. It needs to be kept specific to the project and written in a clear and concise manner that enables the information to be used during project familiarisation and induction. As in Section 7.1, there is flexibility to communicate this information in a way that best suits for the project. You may use paragraphs, dot points, tables, etc. You may combine this information with the summary presented in Section 7.2.1.

Provide sufficient information to ensure that current and planned controls are understood by the reader.

7.2.1 Impact / Hazard / Activity 1

Describe how the risk will be managed during the project.

8 Communications

8.1 Onsite Communication and Consultation

8.1.1 Health and Safety Training including Induction

Describe the Health and Safety training process and requirements.

8.1.2 Health and Safety Activities, Meetings and Committees

List all activities, briefings and committee meetings such as toolbox talks, daily pre-start meeting, pre-job briefing, safety committee meeting, safety inspections/ audits, etc.

There is flexibility to communicate this information in a way that best suits your project. You may use

paragraphs, dot points, tables, etc.

8.1.3 Health and Safety Message Board

List strategic locations of Health and Safety message boards so that project workforce will be able to receive relevant information.

8.2 Communication with Contractors and Suppliers

8.2.1 Contractors and Sub-Contractors

List processes and types of information to ensure contractors and subcontractors can safety manage the activities and people in their work areas.

8.2.2 Suppliers

List processes and types of information to ensure the supplier can safely manage the activities and people within their responsibility.

8.3 Community / External Communication

8.3.1 Community Liaison

Describe accountability and process to report any OHS/CHS information to the communities as part of the community engagement requirements.

8.3.2 Regulatory/ Local Government

Describe accountability and process to report any OHS/CHS information to local government agencies/ department as part of the legal reporting requirements.

8.4 Consultation and Complaints

Describe the process to promote the active participation of project workforce in health and safety decisions. Employees and contractors are consulted and given opportunity, encouragement, and training to be proactively involved in health and safety matters affecting the project and their work activities. All workplace consultation should be recorded.

Describe the process to ensure health and safety complaints are received, reviewed and managed in accordance with the health and safety framework requirement.

A similar process shall be developed and implemented for CHS consultation and complaints from community members.

8.5 Non-Compliance/ Conformance and Disciplinary Process

Describe the disciplinary process for non-compliance or non-conformance to health and safety policies and procedures including the requirements of this document.

9 Training and Competency

Describe the project specific health and safety training required by workers and contractors including inductions (where relevant). For project personnel refer to the training needs analysis. For contractors, refer to the contractor prequalification to identify and specific training and induction needs on what the contractor approval is conditional. It is not sufficient to just list the types of training. The HSMP should document which role types should receive each type of training.

Role Type	Project Training
All workers and contractors	Safety Induction

9.1 Awareness and Competency

Describe the health and safety training induction, awareness, and competency on the project. Awareness and competency considerations should include:

- Safety induction and training provided by the project to raise awareness levels;
- Task specific competency assessments conducted by the Contractor;
- Training and induction for the Owner's team specific to the area in which the work is conducted; and
- Competency assessment and required training to render workers/contractors competent to carry out the work activity.

10 Emergency Management

10.1 Emergency Response

Provide a brief summary of site's emergency response preparedness (ERP) plan including reporting procedures, emergency contacts, emergency response team (ERT), evacuation plan/ assembly points and emergency test/ evacuation drills. The intent of this section is to ensure that the site manager/supervisor/worker at the operational level will know what to do in an emergency situation. It is not the intention that the complete site's ERP procedure be included in this section. In large, complex projects the ERP should be a standalone document that is managed by the PIU/Contractor.

There is flexibility to communicate this information in a way that best suits your project. You may use paragraphs, dot points, tables, etc.

Fire, spill response and first aid training and competency can be addressed in the sections below.

The ERP must include local communities during emergencies including natural disasters when the risk and impact assessments identified potential aspects/impacts caused by the project.

10.2 Fire Protection and Prevention

Provide a brief summary of the site's fire protection and prevention procedures including fire response (internal/ external), fire notification and alarms, use and management of firefighting equipment (e.g. fire extinguishers), high risk fire activities such as welding, smoking policy, fuel storage and fire inspections.

10.3 Hazardous Substance Spill Response and Prevention

This Section is not mandatory but if the project or site use or store large quantity of hazardous substances you may include a brief summary of the hazardous substance spill response and prevention management procedures.

10.4 First Aid and Medical Facilities

Provide information on the first aid kits, first aiders, eye wash stations and emergency showers including their locations within the project site.

Described the first aid and/or medical facilities available onsite including the location, medical supplies and equipment and personnel (e.g. first responder, paramedic, nurse) manning the facilities. Also provide information in regard to medical evacuation (i.e. ambulance, medivac, etc), hospitals or health clinics.

11 Site Security Plan

Describe the site's security plan addressing building and infrastructure security, exterior boundaries, access/ egress of project personnel and visitors, movement of equipment and materials, site traffic and vehicle parking, patrol and security inspections, responsibility during emergency situations, etc.

12 Incident Reporting and Investigation

Describe the project incident reporting and investigation process which must be aligned to local legal requirements (if available), SAR OHS Incident Reporting and Investigation Guidelines and any other requirements specified in the contract.

There is flexibility to communicate this information in a way that best suits your project. The sub sections below are outlines to assist – add or delete as required. Use paragraphs, bullet points, flow chart, etc.

Community health and safety incidents caused or impacted by the project must be reported, investigated and corrective actions identified, implemented and communicated to the community.

12.1 Roles and Responsibilities

Provide a short description of the investigation team roles including competency. Also include the roles and responsibilities of the corrective action owners.

12.2 Management of Incidents

Refer to SAR OHS Incident Reporting and Investigation Guidelines and/or Contractor's Incident Management Procedure (if available).

12.2.1 Investigation of Incident and Near Miss

12.2.2 Corrective and Preventive Actions

12.2.3 Reporting and Recording

12.3 Injury Management

Describe the project injury management process to ensure that any workplace injury is treated, managed and complied with the project's fitness for work criteria before the individual can return to normal work duties (i.e. return-to-work program).

13 Project Health and Safety Performance

Develop objectives, targets and key performance indicators (KPIs) such as the number of risk assessment, training and inspection/audit conducted that are proactive and where the outcomes can be directly controlled by the project/ owner's team by implementing OHS and CHS operational controls based on the project risk assessment. Do not develop targets that may inadvertently discourage incident reporting or create a blame culture (e.g. zero incident reports raised, zero audit findings etc).

13.1 Measuring and Monitoring

Describe the health and safety monitoring process where the project impacts the workplace, the environment and the community. Environmental and occupational health monitoring will be conducted to verify the efficacy of operational controls identified in the management of 'High' risks.

13.2 Key Performance Indicators

Develop and describe the key performance indicators (KPIs) for project health and safety objectives and targets. This section can be combined with Section 3 Objectives.

Health and Safety Management Plan

13.3 Audits and Inspections

The HSMP shall be audited internally by the PIU and externally by relevant stakeholders (e.g. Bank). During these audits, the auditor(s) must determine if the risks are being mitigated as described and whether the measures of success (e.g. KPIs) are being achieved.

The following table outlines when the plan will be audited and by whom.

Audit / Inspection	Who will audit the plan?	When is it scheduled for?

The table above contains examples only. Delete examples and adjust as required for each project.

The Contractor shall implement a routine inspection program for specific work area and activity. Where the work activity/ process has been identified as 'Substantial or High' risk, daily or pre-start inspection should be applied.

14 Management of Change (MOC)

Describe the MOC process and requirements for changes to the operational processes and controls that may impact on OHS / CHS performance. Changes may be planned or unplanned, sudden or gradual, and temporary or permanent. MOC must be approved by area or process owner(s) and communicated to area workers, community members (if impact the community) and other relevant stakeholders.

14.1 New Significant Risk/ Hazard Identified

Describe the process when a new or unforeseen risk/ hazard has been identified (e.g. through a near miss, incident, new process or non-routine activity that was not planned) and how the risk will be managed.

15 Management Review

Describe the management review of the HSMP process including participants and how often it is done. The review must evaluate any need for change and establish actions to improve the Plan, its processes and resource needs. The review must be documented and communicated to workers, contractors and relevant stakeholders.

Annex 1

Project Legal Register

Health and Safety Management Plan

PROJECT LEGAL REGISTER

Using the Health, Safety, Environment, Community (HSEC) legal obligations identified for the project, list the obligations relevant to the project and describe how they will be met. You may choose to delete rows containing legislation that does not apply to your project. If so, include the statement below. If not, delete the statement below.

Version xxxx of the Legal Obligations Register was reviewed by (names) and legislation deemed to be not applicable to the project was omitted.

Legislation	How does the legislation apply to Project?	H	S	E	C	Last Amendment	How will these obligations be met in this project?

Annex 2

Project Significant Risk Register

You may present your Significant Risk Register in the table below, or as a separate Excel or Word document (provide a link to the document or a specific reference including document name and location).

Health and Safety Management Plan

SIGNIFICANT RISK REGISTER

						Inherent Risk				Current Risk			
Project Activity	OHS / CHS Issue or Hazard	Hazard	Risk Scenario	Risk Scenario Impact Description	Cause(s)	Risk Scenario Consequence	Risk Scenario Likelihood	Risk Scenario Classification	Controls	Risk Scenario Consequence	Risk Scenario Likelihood	Risk Scenario Classification	Comments and Action Items

Revision History

First Issue	Effective date	Prepared by	Approved by	
1.0				
Revision Number	**Revision date**	**Revised by**	**Approved by**	**Reason for change**

Health and Safety Management Plan

Environmental Code of Practice

Applicable ECPs are as follows:

- ECP 1: Waste Management
- ECP 2: Fuels and Hazardous Goods Management
- ECP 3: Water Management
- ECP 4: Drainage Management
- ECP 5: Air Quality Management
- ECP 6: Noise and Vibration Management
- ECP 7: Protection of Flora
- ECP 8: Protection of Fauna
- ECP 9: Road Transport and Road Traffic Management
- ECP 10: Construction Camp Management
- ECP 11: Worker Health and Safety

The table contains the detailed account of ECPs:

ECP 1: Waste Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
General Waste	Soil and water pollution from the improper management of waste and excess materials from the construction sites.	• The Contractor will • Develop site specific waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food waste etc.) prior to commencing of construction and submit to supervision consultant for approval. • Organize disposal of all wastes generated during construction in the designated disposal sites approved by the Project. • Minimize the production of waste materials by 3R (Reduce, Recycle and Reuse) approach. • Segregate and reuse or recycle all the wastes, wherever practical. • Vehicles transporting solid waste will be covered with tarps or nets to prevent spilling waste along the route. • Train and instruct all personnel in waste management practices and procedures as a component of the environmental induction process. • Provide refuse containers at each worksite. • Request suppliers to minimize packaging where practicable. • Place a high emphasis on good housekeeping practices.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Maintain all construction sites in a cleaner, tidy and safe condition and provide and maintain appropriate facilities as temporary storage of all wastes before transportation and final disposal. • Potable water should be supplied in bulk containers to reduce the quantity of plastic waste (plastic bottles). Plastic bag use should be avoided.
Hazardous Waste	Health hazards and environmental impacts due to improper waste management practices	The Contractor will • Collect chemical waste in 200-liter drums (or similar sealed container), appropriately labelled for safe transport to an approved chemical waste depot. • Store, transport and handle all chemicals avoiding potential environmental pollution. • Store all hazardous wastes appropriately in bunded areas away from water courses. • Make available Material Safety Data Sheets (MSDSs) for hazardous materials on-site during construction. • Collect hydrocarbon wastes, including lube oils, for safe transport off-site for reuse, recycling, treatment or disposal at approved locations. • Construct concrete or other impermeable flooring to prevent seepage in case of spills.

ECP 2: Fuels and Hazardous Goods Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Fuels and hazardous goods.	Materials used in construction have the potential to be a source of contamination. Improper storage and handling of fuels, lubricants, chemicals, and hazardous goods/materials on-site, and potential spills from these goods may harm the environment or health of construction workers.	The Contractor will • Prepare spill control procedures and submit them for supervision consultant approval. • Train the relevant construction personnel in handling of fuels and spill control procedures. • Store dangerous goods in bunded areas on top of a sealed plastic sheet away from watercourses. • Refueling will occur only within bunded areas. • Store and use fuels in accordance with MSDSs. Make available MSDS for chemicals and dangerous goods on-site. • Transport waste of dangerous goods, which cannot be recycled, to a designated disposal site. • Provide absorbent and containment material (e.g., absorbent matting) where hazardous material are used

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		and stored; and ensure personnel trained in the correct use. • Provide protective clothing, safety boots, helmets, masks, gloves, goggles, to the construction personnel, appropriate to materials in use. • Make sure all containers, drums, and tanks that are used for storage are in good condition and are labelled with expiry date. Any container, drum, or tank that is dented, cracked, or rusted might eventually leak. Check for leakage regularly to identify potential problems before they occur. • Store and use fuels in accordance with MSDSs. • Store all liquid fuels in fully bunded storage containers, with appropriate volumes, a roof, a collection point and appropriate filling/decanting point. • Store hazardous materials above flood level considered for construction purposes • Put containers and drums in temporary storage in clearly marked areas, where they will not be run over by vehicles or heavy machinery. The area will preferably slope or drain to a safe collection area in the event of a spill. • Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution. • Avoid the use of material with greater potential for contamination by substituting them with more environmentally friendly materials.

ECP3: Water Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Hazardous material and Waste	Water pollution from the storage, handling and disposal of hazardous materials and general construction waste, and accidental spillage	The Contractor will • Follow the management guidelines proposed in ECPs 1 and 2. • Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways or storm water systems.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Discharge from construction sites	Construction activities, sewage from construction sites and work camps may affect the surface water quality. The construction works will modify groundcover and topography changing the surface water drainage patterns of the area. These changes in hydrological regime lead to increased rate of runoff, increase in sediment and contaminant loading, increased flooding, and effect habitat of fish and other aquatic biology.	The Contractor will • Install temporary drainage works (channels and bunds) in areas required for sediment and erosion control and around storage areas for construction materials. • Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from site. • Divert runoff from undisturbed areas around the construction site. • Stockpile materials away from drainage lines • Prevent all solid and liquid wastes entering waterways by collecting solid waste, oils, chemicals, bitumen spray waste and wastewaters from brick, concrete and asphalt cutting where possible and transport to an approved waste disposal site or recycling depot. • Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off site or into approved bunded areas on site. Ensure that tires of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This should be done in every exit of each construction vehicle to ensure the local roads are kept clean.
Soil erosion and siltation	Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies.	The Contractor will • Stabilize the cleared areas not used for construction activities with vegetation or appropriate surface water treatments as soon as practicable following earthwork to minimize erosion. • Ensure that roads used by construction vehicles are swept regularly to remove dust and sediment. • Water the loose material stockpiles, access roads and bare soils on an as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds).
Drinking water	Untreated surface water is not suitable for drinking purposes due to presence of suspended solids and Ecoli.	The Contractor Will • Provide the drinking water that meets SEQS standards. Drinking water to be chlorinated at source, and ensure presence of residual chlorine 0.1 ~

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		0.25 ppm as minimum after 30 minutes of chlorine contact time.

ECP4: Drainage Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Excavation and earth works, and construction yards	Lack of proper drainage for rainwater/liquid waste or wastewater owing to the construction activities harms environment in terms of water and soil contamination, and mosquito growth.	The Contractor will • Prepare drainage management procedures and submit them for supervision consultant approval. • Prepare a program to prevent/avoid standing waters, which supervision consultant will verify in advance and confirm during implementation. • Provide alternative drainage for rainwater if the construction works/earth-fillings cut the established drainage line. Establish local drainage line with appropriate silt collector and silt screen for rainwater or wastewater connecting to the existing established drainage lines already there. • Rehabilitate road drainage structures immediately if damaged by contractors' road transports. • Build new drainage lines as appropriate and required for wastewater from construction yards connecting to the available nearby recipient water bodies. Ensure wastewater quality conforms to SEQS, before it is being discharged into the recipient water bodies. • Ensure that there will be no water stagnation at the construction sites and camps. • Provide appropriate silt collector and silt screen at the inlet and manholes and periodically clean the drainage system to avoid drainage congestion. • Protect natural slopes of drainage channels to ensure adequate storm water drains. • Regularly inspect and maintain all drainage channels to assess and alleviate any drainage congestion problem.
Ponding of water	Health hazards due to mosquito breeding	• Do not allow ponding of water especially near the waste storage areas and construction camps. • Discard all the storage containers that are capable of storing of water, after use or store them in inverted position.

ECP 5: Air Quality Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Air quality can be adversely affected by vehicle exhaust emissions and combustion of fuels.	The Contractor will • Prepare air quality management plan (under the Pollution Prevention Plan) and submit the plan for supervision consultant approval. • Fit vehicles with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition. • Operate the vehicles in a fuel efficient manner. • Cover hauls vehicles carrying dusty materials moving outside the construction site. • Impose speed limits on all vehicle movement at the worksite to reduce dust emissions. • Control the movement of construction traffic. • Water construction materials prior to loading and transport. • Service all vehicles regularly to minimize emissions. • Limit the idling time of vehicles not more than 2 minutes.
Construction machinery	Air quality can be adversely affected by emissions from machinery and combustion of fuels.	The Contractor will • Fit machinery with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition in accordance with the specifications defined by their manufacturers to maximize combustion efficiency and minimize the contaminant emissions. Proof or maintenance register will be required by the equipment suppliers and contractors/subcontractors. • Focus special attention on containing the emissions from generators. • Machinery causing excess pollution (e.g. visible smoke) will be banned from construction sites. • Service all equipment regularly to minimize emissions. • Provide filtering systems, duct collectors or humidification or other techniques (as applicable) to the concrete batching and mixing plant to control the particle emissions in all its stages, including unloading, collection, aggregate handling, cement dumping, circulation of trucks and machinery inside the installations.
Construction activities	Dust generation from construction sites, material stockpiles and access roads is a nuisance in the environment and can be a health hazard, and also can affect the local crops;	The Contractor will • Water the material stockpiles, access roads and bare soils on an as required basis to minimize the potential for environmental nuisance due to dust. Increase the watering frequency during periods of high risk (e.g. high winds). Stored materials such as gravel and sand will be covered and confined to avoid their being wind-drifted. • Minimize the extent and period of exposure of the bare surfaces.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Restore disturbed areas as soon as practicable by vegetation/grass-turfing. • Store the cement in silos and minimize the emissions from silos by equipping them with filters. • Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations. • Not water as dust suppression on potentially contaminated areas so that a liquid waste stream will be generated. • Crushing of rocky and aggregate materials will be wet-crushed, or performed with particle emission control systems. • Not permit the burning of solid waste.

ECP 6: Noise & Vibration Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Noise quality will be deteriorated due to vehicular traffic	The Contractor will • Prepare a noise and vibration management plan (under the Pollution Prevention Plan) and submit the plan for supervision consultant approval. • Maintain all vehicles in order to keep it in good working order in accordance with manufactures maintenance procedures. • Make sure all drivers and operators will comply with the traffic codes concerning maximum speed limit, driving hours, etc. • Organize the loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise on the work site.
Construction machinery	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor will • Appropriately site all noise generating activities to avoid noise pollution to local residents. • Use the quietest available plant and equipment. • Maintain all equipment in order to keep it in good working order in accordance with manufactures maintenance procedures. Equipment suppliers and contractors will present proof of maintenance register of their equipment. • Install acoustic enclosures around generators to reduce noise levels. • Fit high efficiency mufflers to appropriate construction equipment. • Avoid the unnecessary use of alarms, horns and sirens.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activity	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor will • Notify adjacent landholders prior any typical noise events outside of daylight hours. • Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions. • Employ best available work practices on-site to minimize occupational noise levels. • Install temporary noise control barriers where appropriate. • Notify affected people if major noisy activities will be undertaken, e.g. blasting. • Plan activities on site and deliveries to and from site to minimize impact. • Monitor and analyze noise and vibration results and adjust construction practices as required. • Avoid undertaking the noisiest activities, where possible, when working at night near the residential areas.

ECP 07: Protection of Flora

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Vegetation clearance	Local flora are important to provide shelters for the birds, offer fruits and/or timber/fire wood, protect soil erosion and overall keep the environment very friendly to human-living. As such damage to flora has wide range of adverse environmental impacts.	The Contractor will • Prepare a plan for protection of flora and submit the plan for supervision consultant approval. • Minimize disturbance to surrounding vegetation. • Use appropriate type and minimum size of machine to avoid disturbance to adjacent vegetation. • Get approval from supervision consultant for clearance of vegetation. • Make selective and careful pruning of trees where possible to reduce need of tree removal. • Control noxious weeds by disposing of at designated dump site or burn on site. • Clear only the vegetation that needs to be cleared in accordance with the engineering plans and designs. These measures are applicable to both the construction areas as well as to any associated activities such as sites for stockpiles, disposal of fill a, etc. • Not burn off cleared vegetation – where feasible, chip or mulch and reuse it for the rehabilitation of affected areas, temporary access tracks or landscaping. Mulch provides a seed source, can limit embankment erosion, retains soil

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		moisture and nutrients, and encourages re-growth and protection from weeds. • Return topsoil and mulched vegetation (in areas of native vegetation) to approximately the same area of the roadside it came from. • Avoid work within the drip-line of trees to prevent damage to the tree roots and compacting the soil. • Minimize the length of time the ground is exposed or excavation left open by clearing and re-vegetate the area at the earliest practically possible. • Ensure excavation works occur progressively and re-vegetation done at the earliest • Provide adequate knowledge to the workers regarding nature protection and the need of avoid felling trees during construction • Supply appropriate fuel in the work camps to prevent fuel wood collection.

ECP 08: Protection of Fauna

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities	The location of construction activities can result in the loss of wild life habitat and habitat quality	The Contractor will • Prepare a plan for protection of fauna and submit the plan for supervision consultant approval. • Limit the construction works within the designated sites allocated to the contractors. • check the site for animals trapped in, or in danger from site works and use a qualified person to relocate the animal.
Vegetation clearance	Impact on migratory birds, its habitat and its active nests	The Contractor will • Not be permitted to destruct active nests or eggs of migratory birds. • Minimize the tree removal during the bird breeding season. If works must be continued during the bird breeding season, a nest survey will be conducted by a qualified biologist prior to commence of works to identify and locate active nests. • If bird nests are located/ detected within the ledges and roadside embankments then those areas should be avoided. • Petroleum products should not come in contact with the natural and sensitive ecosystems. Contractor must minimize the release of oil, oil wastes or any other substances harmful to migratory birds'

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		habitats, to any waters, wetlands or any areas frequented by migratory birds.
	Clearance of vegetation may impact shelter, feeding and/or breeding and/or physical destruction and severing of habitat areas	The Contractor will • Restrict the tree removal to the minimum numbers required. • Relocate hollows, where appropriate. • Fell the hollow bearing trees in a manner which reduces the potential for fauna mortality. Felled trees will be inspected after felling for fauna and if identified and readily accessible will be removed and relocated or rendered assistance if injured. After felling, hollow bearing trees will remain unmoved overnight to allow animals to move of their own volition.
Night time lighting	Lighting from construction sites and construction camps may affect the visibility of night time migratory birds that use the moon and stars for navigation during their migrations.	The Contractor will • Use lower wattage flat lens fixtures that direct light down and reduce glare, thus reducing light pollution, • Avoid flood lights unless they are absolutely required. • Use motion sensitive lighting to minimize unneeded lighting. • Use, if possible, green lights that are considered as bird's friendly lighting instead of white or red colour lights. • Install light shades or plan the direction of lights to reduce light spilling outside the construction area.
Construction camps	Illegal poaching	The Contractor will • Provide adequate knowledge to the workers regarding protection of flora and fauna, and relevant government regulations and punishments for illegal poaching. • Ensure that staff and Subcontractors are trained and empowered to identify, address and report potential environmental problems.

ECP 09: Road Transport and Road Traffic Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Increased traffic use of road by construction vehicles will affect the movement of normal road traffics and the safety of the road-users.	The Contractor will • Prepare a traffic management plan and submit the plan for supervision consultant approval. • Strictly follow the Project's 'Traffic Management Plan' and work with close coordination with the Traffic Management Unit. • Prepare and submit additional traffic plan, if any of his traffic routes are not covered in the

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		Project's Traffic Management Plan, and requires traffic diversion and management. • Include in the traffic plan to ensure uninterrupted traffic movement during construction: detailed drawings of traffic arrangements showing all detours, temporary road, temporary bridges temporary diversions, necessary barricades, warning signs / lights, road signs etc. • Provide signs at strategic locations of the roads complying with the schedules of signs contained in the Pakistan Traffic Regulations.
	Accidents and spillage of fuels and chemicals	The Contractor will • Restrict truck deliveries, where practicable, to day time working hours. • Restrict the transport of oversize loads. • Operate vehicles, if possible, to non-peak periods to minimize traffic disruptions. • Enforce on-site speed limit.

ECP 10: Construction Camp Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Siting and Location of construction camps	Campsites for construction workers are the important locations that have significant impacts such as health and safety hazards on local resources and infrastructure of nearby communities.	The Contractor will • Prepare a construction camp management plan and submit the plan for supervision consultant's approval. • Locate the construction camps within the designed sites or at areas which are acceptable from environmental, cultural or social point of view; and approved by the supervision consultant. • Consider the location of construction camps away from communities in order to avoid social conflict in using the natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities. • Submit to the supervision consultant for approval a detailed layout plan for the development of the construction camp showing the relative locations of all temporary buildings and facilities that are to be constructed together with the location of site roads, fuel storage areas (for use in power supply generators), solid waste management and dumping locations, and drainage facilities, prior to the development of the construction camps.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Local authorities responsible for health, religious and security will be duly informed on the set up of camp facilities so as to maintain effective surveillance over public health, social and security matters.
Construction Camp Facilities	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.	Contractor will provide the following facilities in the campsites • Adequate housing for all workers. • Safe and reliable water supply, which should meet SEQS. Drinking water to be chlorinated at source, and ensure presence of residual chlorine 0.1 ~ 0.25 ppm as minimum after 30 minutes of chlorine contact time (World Health Organization -WHO guideline). • Hygienic sanitary facilities and sewerage system. The toilets and domestic waste water will be collected through a common sewerage. Provide separate latrines and bathing places for males and females with total isolation by location. The minimum number of toilet facilities required is one toilet for every ten persons. • Treatment facilities for sewerage of toilet and domestic wastes. • Storm water drainage facilities. • Paved internal roads. • Provide child crèches for women working construction site. The crèche should have facilities for dormitory, kitchen, indoor and outdoor play area. Schools should be attached to these crèches so that children are not deprived of education whose mothers are construction workers. • Provide in-house community/common entertainment facilities. Dependence of local entertainment outlets by the construction camps to be discouraged/prohibited to the extent possible.
Disposal of waste	Management of wastes is crucial to minimize impacts on the environment	The Contractor will • Ensure proper collection and disposal of solid wastes within the construction camps. • Insist waste separation by source; organic wastes in one container and inorganic wastes in another container at household level. • Store inorganic wastes in a safe place within the household and clear organic wastes on daily basis to waste collector. Establish waste collection, transportation

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		and disposal systems with the manpower and equipment/vehicles needed. • Do not establish site specific landfill sites. All solid waste will be collected and removed from the work camps and disposed in approval waste disposal sites.
Fuel supplies for cooking purposes	Illegal sourcing of fuel wood by construction workers will impact the natural flora and fauna	The Contractor will • Provide fuel to the construction camps for their domestic purpose, in order to discourage them to use fuel wood or other biomass. • Made available alternative fuels like natural gas or kerosene on ration to the workforce to prevent them using biomass for cooking. • Conduct awareness campaigns to educate workers on preserving the protecting the biodiversity and wildlife of the Project area, and relevant government regulations and punishments on wildlife protection.
Health and Hygiene	There will be a potential for diseases to be transmitted including malaria, exacerbated by inadequate health and safety practices. There will be an increased risk of work crews spreading Sexually Transmitted Infections (STIs) and Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS). In adequate safety facilities to the construction camps may create security problems and fire hazards	• The Contractor will • Provide adequate health care facilities within construction sites. • Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint fulltime designated first aider or nurse. • Provide ambulance facility for the labourers during emergency to be transported to nearest hospitals. • Initial health screening of the labourers coming from outside areas. • Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work. • Provide HIV awareness programming, including STIs and HIV information, education and communication for all workers on regular basis. • Provide adequate drainage facilities throughout the camps to ensure that disease vectors such as stagnant water bodies and puddles do not form. Regular mosquito repellent sprays during rainy season in offices and construction camps and yards. • Not dispose food waste openly as that will attract rats and stray dogs. • Carryout short training sessions on best hygiene practices to be mandatorily participated by all workers. Place display

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		boards at strategic locations within the camps containing messages on best hygienic practices. The Contractor will • Provide appropriate security personnel (police or private security guards) and enclosures to prevent unauthorized entry in to the camp area. • Maintain register to keep a track on a head count of persons present in the camp at any given time. • Encourage use of flameproof material for the construction of labour housing / site office. Also, ensure that these houses/rooms are of sound construction and capable of withstanding wind storms/cyclones. • Provide appropriate type of firefighting equipment suitable for the construction camps • Display emergency contact numbers clearly and prominently at strategic places in camps. • Communicate the roles and responsibilities of labourers in case of emergency in the monthly meetings with contractors.
Site Restoration	Restoration of the construction camps to original condition requires demolition of construction camps	The Contractor will • Dismantle and remove from the site all facilities established within the construction camp including the perimeter fence and lockable gates at the completion of the construction work. • Dismantle camps in phases and as the work gets decreased and not wait for the entire work to be completed. • Give prior notice to the labourers before demolishing their camps/units. • Maintain the noise levels within the national standards during demolition activities. • Different contractors should be hired to demolish different structures to promote recycling or reuse of demolished material. • Reuse the demolition debris to a maximum extent. Dispose remaining debris at the designated waste disposal site. • Handover the construction camps with all built facilities as it is if agreement between both parties (contactor and land-owner) has been made so.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Restore the site to its condition prior to commencement of the works or to an agreed condition with the landowner.

ECP 11: Worker Health and Safety

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Best practices	Construction works may pose health and safety risks to the construction workers and site visitors leading to severe injuries and deaths. The population in the proximity of the construction site and the construction workers will be exposed to a number of (i) biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, waste water, vector transmitted diseases etc.), (ii) risk factors resulting from human behavior (e.g. STD, HIV etc.) and (iii) road accidents from construction traffic.	The Contractor will • Prepare an OHS plan and submit the plan for supervision consultant's approval. • Implement suitable safety standards for all workers and site visitors which should not be less than those laid down on the international standards (e.g. International Labour Office guideline on 'Safety and Health in Construction; WBG's 'Environmental Health and Safety Guidelines') and contractor's own national standards or statutory regulations, in addition to complying with Pakistan standards. • Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular construction activity and specific classes of hazards in the work areas. • Provide personal protection equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty ones and replacing them with the damaged ones. • Safety procedures include provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job. • Appoint an EHS manager to look after the health and safety of the workers. • Inform the local authorities responsible for health, religious and security duly informed before commencement of civil works and establishment of construction camps so as to maintain effective surveillance over public health, social and security matters.
Child and pregnant	Lack of first aid facilities and health care facilities in the immediate vicinity	The Contractor will • Ensure health care facilities and first aid facilities are readily available.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
labour accident	will aggravate the health conditions of the victims	Appropriately equipped first-aid stations should be easily accessible throughout the place of work. • Document and report occupational accidents, diseases, and incidents. • Prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of hazards, in a manner consistent with good international industry practice. • Identify potential hazards to workers, particularly those that may be life-threatening and provide necessary preventive and protective measures. • Provide awareness to the construction drivers and operators to strictly follow the driving rules. • Provide adequate lighting in the construction area, inside the tunnels, inside the powerhouse cavern and along the roads.
Construction Camps	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards	The Contractor will provide the following facilities in the campsites to improve health and hygienic conditions as mentioned in ECP 16 Construction Camp Management • Adequate ventilation facilities • Safe and reliable water supply. • Hygienic sanitary facilities and sewerage system. • Treatment facilities for sewerage of toilet and domestic wastes • Storm water drainage facilities. • Recreational and social facilities • Safe storage facilities for petroleum and other chemicals in accordance with ECP 2 • Solid waste collection and disposal system in accordance with ECP1. • Arrangement for trainings • Paved internal roads. • Security fence at least 2 m height. • Sick bay and first aid facilities
Other ECPs	Potential risks on health and hygiene of construction workers and general public	The Contractor will follow the following ECPs to reduce health risks to the construction workers and nearby community • ECP 2: Fuels and Hazardous Goods Management • ECP 4: Drainage Management • ECP 10: Air Quality Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• ECP 11: Noise and Vibration Management • ECP 13: Road Transport and Road Traffic Management .
Training	Lack of awareness and basic knowledge in health care among the construction workforce, make them susceptible to potential diseases.	The Contractor will • Train all construction workers in basic sanitation and health care issues (e.g., how to avoid malaria and transmission of STIs HIV/AIDS). • Train all construction workers in general health and safety matters, and on the specific hazards of their work. Training should consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. • Implement malaria, HIV/AIDS and STI education campaign targeting all workers hired, international and national, female and male, skilled, semi- and unskilled occupations, at the time of recruitment and thereafter pursued throughout the construction phase on on-going and regular basis. This should be complemented by easy access to condoms at the workplace as well as to voluntary counselling and testing.

Guidelines for the Preparation of Project and Site-Specific Plans

Specific plans relevant to the ESMP are as follows:

1. Site Specific Environmental and Social Management Plan (SSESMP)
2. Labor Management Plan (LMP)
3. Project-specific Stakeholder Engagement Plan (SEP) / Communication Plan
4. Occupational Health and Safety Plan (OHSP)
5. Community Health and Safety Plan (CHSP)
6. Emergency Preparedness and Response Plan (EPRP)
7. Workers Camp Management Plan
8. Waste Management Plan
9. Traffic Management Plan
10. Spill Prevention and Response Plan
11. Pollution Prevention Plan
12. Material Transportation Plan

1. Contractor's Site Specific Environmental and Social Management Plan (SSESMP)

The Contractor will develop a construction phase SSESMP in line with the ESMP. The Contractor will also be expected to have its own Environmental and Social Management System aligned to the principles of ISO 14001:2015 and OHSAS 45001 or equivalent. These plans will be formally approved by PIU-KWSSIP and CSC before any work occurs on site. The SSESMP will consist of the following as a minimum and be structured as follows:

a. Section 1: Master SSESMP Document

The master SSESMP document will clearly define the Contractor's ESHS commitments and requirements, including:

- Place a high emphasis on good housekeeping practices.
- ESHS policy, committing to compliance with the ESMP.
- Identification of all regulations, standards, and regulatory limits, and specify the means for maintaining compliance.
- Training plan outlining training and capacity building (covering both introductory sessions and technical training).
- Contractor's ESMS and H&S management system
- Organizational capacity and structure, roles and responsibilities, key resources
- Procedures, logistics and communication channels
- Monitoring, inspections, audits and evaluations
- Reporting
- Management of nonconformity procedures (including management and tracking)

- A permit register, with all permits required by the national requirements relating to the project, including timeframes and renewal dates and procedure
- An environmental, social, health and safety (ESHS) risk assessment register, to be maintained and updated monthly and discussed with PIU KWSSIP.
- Description of project areas, including the number, a map, key activities, opening and closing schedule, and access plans.
- A pre-construction plan, which outlines the pre-construction surveys planned to be carried out to record the existing baseline of each site, any changes to the baseline of the ESMP, and any additional measures (following the mitigation hierarchy) to avoid, minimize and mitigate. This will include detailed photographic and video footage for each specific work area

b. Section 2: SSESMP Sub-plans and Procedures

Development and implementation of specific sub-plans, which are detailed as follows will be referenced under the SSESMP. **Table** outlines various sub-plans to be developed and implemented by the Contractor under its own SSESMP. All plans need to be developed in line with the applicable standards and GIIP. In addition to GIIP measures, the sub-plans will include the specific mitigation measures identified within the ESMP. The key mitigation measures identified in the ESMP will require to be included in the relevant sub-plans. The plans will typically include a similar structure, such as:

- A standard introduction referencing the project, summarizing the project description, linkage of the plan to the SSESMP and other plans, the purpose and scope of the plan
- Requirements and standards
- Roles and responsibilities
- Impact and risk assessment
- Control measures
- Training requirements
- Monitoring and reporting procedures
- Other relevant details
- Document/record control

It is important to note that many plans have overlapping or cross-cutting measures that may need to be considered and included in multiple plans. All plans, when developed, will be reviewed and considered together by the Contractor as part of its overall system, to ensure that key environmental, social, health, safety and security measures are appropriately included, and there is no contradictions between plans.

Sub-plans to be Prepared by the Contractor and Summary of the Aspects to be Covered.

Plan	Objectives and Contents
Social and Community	
Labor Management Plan (LMP)	◆ To establish and foster sound worker-management relations ◆ Human resources procedures (based on the project HR and labour commitment ◆ Project HR and labour commitment

Plan	Objectives and Contents
	◆ Workers' code of conduct ◆ Construction labour monitoring procedure ◆ Supply chain analysis and due diligence procedure ◆ Workers' grievance mechanism
Project-specific Stakeholder Engagement Plan (SEP) / Communication Plan	◆ Ensuring that the mechanism for information disclosure on purpose and nature of the construction activities, early notification of construction start date, scheduling and duration and potential impacts and health and safety measures/ mechanisms is in place ◆ Mechanism for issuance of notification to communities and sensitive receptors for any transport disruptions, construction activities, pedestrian accessibility, etc. is intact ◆ Feedback and grievance redress mechanism is followed ◆ Recruitment and Procurement, Employment of Local Workers details are clear to communities
Health and Safety	
Occupational Health and Safety Plan (OHSP)	◆ To implement a safe working environment, procedures and culture during the construction phase. Further policies / procedures to be developed if need identified through site audits.
Community Health and Safety Plan (CHSP)	◆ To avoid, minimize and manage community health and safety risks.
Emergency Preparedness and Response Plan (EPRP)	◆ To cover potential emergencies during construction
Workers Camp Management Plan	◆ To ensure that all Project accommodation areas are designed, constructed and maintained as healthy, clean and pleasant locations for workers to live in.
Biodiversity	
Site-Specific Compensatory Tree Plantation Plan	◆ The plan will provide details on the contractor's role and step by step approach for managing and monitoring compensatory tree plantation.
Environmental	
Waste Management Plan	◆ To identify predicted waste streams, appropriate handling, reuse and recycle opportunities and, as a last resort, disposal methods
Traffic Management Plan	◆ To plan, coordinate and management all traffic and access risks in relation to the construction phase of the project.
Spill Prevention and Response Plan	◆ To prevent spills and plan for appropriate responses
Pollution Prevention Plan	◆ To effectively control air, noise, water and wastewater pollution
Material Transportation Plan	◆ Construction material logistics planning entails managing materials and equipment both to and from construction sites. These two vital processes are inbound logistics and outbound logistics. Both of these equipment and material management activities require a detailed and thorough plan.

2. Contractor's Labor Management Plan (LMP)

Contents to be covered in this plan by the Contractor include the following:

Impact to be addressed	Management/Mitigation/ Enhancement to be included in plan	KPI
Fair labour management and working conditions	◆ Implement HR policy prepared following KWSSIP-LMP, the project wide labour commitment and related procedures, including a diversity and inclusion policy statement ◆ Include contract clauses for contractors and subcontractors to adhere to the project's reference framework (including the HR policy,	◆ HR and labour commitment ◆ All contractors contractually committed to abide by the HR and labour commitment

Impact to be addressed	Management/Mitigation/ Enhancement to be included in plan	KPI
	GBVH policy, human rights, policy data security policy and use of qualified drivers) ◆ Prevent use of child and forced labour through the HR and labour commitment ◆ Use policies, procedures and contracting processes to require that all workers have their own employment contract detailing working terms and conditions ◆ Screen subcontractors and service providers to check they can operate in line with the project's E&S reference framework ◆ Develop and implement a workers' Code of Conduct ◆ Develop and implement a construction labour monitoring procedure ◆ Develop and implement a recruitment and procurement policies and employment decision-making based on non-discrimination and equal opportunity principles ◆ Develop and implement measures to increase women's participation within the workforce during construction and operations, and to protect women working within the project ◆ Use gender neutral terms in official communications (including reporting of person hour time use) ◆ Create an accepting work environment that is supportive of diversity, that encourages respectful communication, and that addresses verbal harassment ◆ Develop and implement a workers' grievance procedure, which includes specific measures for addressing grievances related to gender-based violence and sexual harassment ◆ Establish committees with worker representatives and management to address working condition and labour rights issues ◆ Identify job protection measures and their coverage, in relation to social security provisions, insurances and temporary deployment (as COVID -19 or similar situations may require) ◆ Undertake a supply chain analysis to identify any risks related to use of child or forced labour and unacceptable OHS conditions ◆ Develop a training plan and capacity building program for Contractor's, subcontractors' and service providers' personnel. ◆ Require any project parties using digital time keeping system to have them in place from the beginning of their time on the project	◆ All workers trained in the HR and labour commitment
Labour rights issues – Code of Conduct	◆ Code of conduct, setting out the rules of conduct by which all workers, will be governed and which includes the following: ◆ Discrimination and equal opportunities ◆ Cross cultural awareness (internationally and locally) ◆ Gender based violence and harassment	◆ Completed code of conduct document ◆ All contractors contractually committed to abiding by the code of conduct

Impact to be addressed	Management/Mitigation/ Enhancement to be included in plan	KPI
	◆ Rules governing interactions with local communities, engaging in sex industry transactions, ◆ Health care awareness and protection from sexually transmitted disease. ◆ Align the code of conduct with the HIV and AIDS policy and awareness and prevention program. ◆ Provide training on the workers code of conduct to all workers during site induction and require signatures upon receipt.	◆ All workers trained in the code of conduct
Labour rights issues – Labour monitoring	◆ Implement labour monitoring procedure, including: ◆ Daily observations of labour and working conditions ◆ Weekly monitoring of workers of all contractors and third party agencies through random spot checks of workers contracts' provision and signing, payroll, overtime, workers; awareness of labour rights, workers' awareness and use of the labour grievance mechanism; through interviews and review of workers' HR files ◆ Weekly review of Workers Complaints logs Weekly review of training records (regarding induction training on code of conduct) ◆ Monthly reporting on compliance monitoring against the Project's human resource policy/labour standard which will include the following: ◆ Women's protection in workforce ◆ Workers with disabilities/special needs participation ◆ Vulnerable workers' protection	◆ Completed labour monitoring activities ◆ Labour monitoring findings, including number of non-compliances identified. ◆ Number, gender, origin, and skill level of workers ◆ Worker contract provision and signing ◆ Working hours and overtime ◆ Payment of salaries and overtime ◆ Worker awareness of labour rights ◆ Cases of non-discrimination and equal opportunities (target zero) ◆ Child and forced labour (target zero)
Labour rights issues – Worker representation	◆ Establish committees with worker representatives and management to address working condition and labour rights issues	◆ Established worker representation committees with democratically elected worker representatives ◆ Number of committee meetings
Labour rights issues – Employment contracts	◆ Produce template and use clear and signed individual worker contracts based on templates with terms and conditions including decent terms for hours of work, rest, wages, leave, overtime payments, time to visit family and enough time to carry out parenting duties. ◆ Advance warning of end of contracts, certificates provided to workers and retention through to operations for as many as possible	◆ Each worker has a signed contract ◆ Evidence of notification of termination of contracts ◆ Certificates provided to workers
Labour rights issues – Labour and social rights awareness	◆ Provide induction training for workers covering health and safety, labour rights, the grievance mechanism, GBVH and how to interact respectfully with local communities.	◆ Each worker has completed induction training ◆ Training records (such as attendance

Impact to be addressed	Management/Mitigation/ Enhancement to be included in plan	KPI
	◆ Provide refresher labour awareness training after probation and before the six-month period ◆ Conduct toolbox talks every six months related to GoS labour laws and regulations to be held by all project employers (KWSSIP / KWSC, Contractor, subcontractors and service providers) whose staff are involved in core business processes (production or service processes essential for a specific business activity without which the project could not continue).	logs for refresher training and toolbox talks)
Labour rights issues - Labour grievance mechanism	◆ A workers' grievance mechanism involving workers' representatives who meet with project management once a month during construction to resolve labour issues. The workers' grievance mechanism will encompass confidential channels to report acts of GBVH and those administering the grievance mechanism will be trained on how to deal with complaints about GBVH	◆ Workers' grievance log showing grievances ◆ Grievances closed out in time and to workers' satisfaction
Influx management	◆ Produce influx management plan, compiling measures within other plans s (stakeholder engagement plan and, community health and safety plan)	◆ Cross-reference and alignment included in all relevant management plans

3. Project- Specific Stakeholder Engagement Plan / Communication Plan

What is a Project-specific Stakeholder Engagement Plan (SEP)/Communication Plan ?

A project-specific stakeholder engagement plan—also known as a stakeholder management plan—is a subsidiary document that is often created alongside the main project plan for a given body of work. It is a written document that is formulated before a project begins, and which is kept on file and updated over the course of the project as necessary. Its purpose is to identify a project's key stakeholders, and to outline a methodology and approach for how the project team will interact and communicate with those stakeholders.

What goes into a stakeholder engagement plan (SEP)?

Stakeholder Identification

This section is used to identify all of the project's stakeholders by name. At a minimum, the section also defines their roles and responsibilities as they relate to the project. In some cases, it can be much more extensive.

Planning to Interact with the Stakeholders

The next section is dedicated to actually determining how the project team will interact and engage with the stakeholders identified in the first portion of the plan. This will often involve a deeper assessment of each stakeholder, which will be used to inform the rest of the plan.

Stakeholder Engagement Activities

The final portion of the plan is essentially an outline of the various activities the project team will undertake to communicate with stakeholders, manage their expectations, and keep them engaged with the project. This includes activities such as pre-planned meetings with stakeholders or key reports. This section of the document will also typically outline the types of communications that will be used throughout the project—FGDs, pamphlets, media, periodic meetings etc.—and which each form of communication is best suited for.

The contractor will follow the KWSSIP-2 Stakeholder Engagement Plan in principle for preparing the Project-specific SEP / Communication Plan. Indicative overview of contents to be covered is as follows:

- **INTRODUCTION**

✓ Background to Stakeholder Engagement
✓ Objectives of the Stakeholder Engagement Plan
✓ Structure of the Document

- **PROJECT DESCRIPTION**

✓ Project Overview
✓ Key Project Aspects
✓ Social Area of Influence

- **LEGAL FRAMEWORK**

✓ Local and WB Requirements for Stakeholder Engagement and Public Consultation

- **KEY PROJECT PRINCIPLES OF STAKEHOLDER ENGAGEMENT AND APPROACH**

✓ Stakeholder Identification and Analysis
✓ Methodology and Approach for Engaging Stakeholders
✓ Vulnerable Groups

- **STAKEHOLDER ENGAGEMENT**

✓ Stakeholder Engagement Activities according to National and International Requirements
✓ Stakeholder Engagement Activities within the Scope of ESA Studies and KWSSIP-2 SEP
✓ Summary of the Social Field Studies for the ESMP Report
✓ Tools for Communication Routine (E.g. Internet/Website, Public Media, FGDs etc.)
✓ Community Relations
✓ Notice Boards

- **STAKEHOLDER ENGAGEGEMENT PROGRAM**

✓ Pre-Construction Phase
✓ Construction Phase

- **GRIEVANCE MECHANISM**

✓ Public Grievance Mechanism
✓ Receipt of Grievances

- ✓ Acknowledgement and Record Keeping
- ✓ Investigation
- ✓ Response to Complainant
- ✓ Discussion of Resolution
- ✓ Worker Grievance Mechanism

- ◆ **EXTERNAL COMMUNICATIONS**

- ✓ Institutional Arrangements, Roles and Responsibilities

4. Occupational and Community Health & Safety Plan

Occupational and Community Health and Safety Plans (OHS / CHS Plans) are key document to address how OHS and CHS risks will be managed in a project. A Health & Safety Framework has been prepared by the World Bank E&S Safeguards Unit which is applicable on all World Bank-financed projects in the South Asia Region (SAR). The framework provides guidelines not only to the proponent but also to the project Contractors to implement a practical approach to manage Occupational Health and Safety (OHS) and Community Health and Safety (CHS) impacts and risks in accordance with national/local regulatory framework, the World Bank Environmental and Social Standards and Environmental Health and Safety (EHS) Guidelines, ISO Standards, Good International Industry Practices (GIIP), etc. The framework also includes a template for OHS / CHS Plans which should be followed by the Contractor for making these plans.

Some key guidelines to be covered under the plan includes the following:

Specific Mitigation Guidelines for Dealing with OHS Hazards

No.	Work Activities and Associated Hazards	Mitigation Guidelines
1.	**Trench Excavation**[14] Collapse of Excavation and falling of materials while working in excavations could result in workers injuries or fatalities. Workers could be at risk from: ◆ Excavations collapsing and burying or injuring people working in them; ◆ Material falling from the sides into excavation; ◆ People or plant falling into excavations. ◆ Serious accidents could occur if buried services are damaged during excavation work. ◆ Excavation inside water stream or at dry areas during wet weather can cause many safety hazards including intrusion of water	**Collapse of excavations:** a- **Temporary support** - Before digging any trench pit, or other excavations, Contractor will decide what temporary support will be required and accordingly plan the precautions to be taken. b- Contractor will make sure the equipment and precautions needed (trench sheets, props, baulks etc.) are available on site before work starts. c- **Battering the excavation sides** - Battering the excavation sides to a safe angle of repose may also make the excavation safer. d- In granular soils that may come across during trenching, the angle of slope should be less than the natural angle of repose of the material being excavated. In wet ground a considerably flatter slope will be required. **Falling or dislodging material:** a- **Loose materials** - may fall from spoil heaps into the excavation. Edge protection should include toe boards or other means, such as projecting trench sheets or box sides to protect against falling materials. Head protection should be worn.

[14] https://www.hse.gov.uk/construction/safetytopics/excavations.htm

No.	Work Activities and Associated Hazards	Mitigation Guidelines
	into excavation, slippery conditions for the drivers of equipment, causing the ground to be slippery and muddy thereby creating the possibility of slips and falls, and making the site work less stable.	b- Effect of plant and vehicles - Do not park plant and vehicles close to the sides of excavations. The extra loadings can make the sides of excavations more likely to collapse. **Falling into excavations** a- **Prevent people from falling** – Contractor will protect edges of excavations with substantial barriers where people are susceptible to fall into them. b- To achieve this, use of following options will be made: ◆ Guard rails and toe boards inserted into the ground immediately next to the supported excavation side; or fabricated guard rail assemblies that connect to the sides of the trench box ◆ The support system itself, e.g. using trench box extensions or trench sheets longer than the trench depth. **Inflow of surface or ground water** a- Sewage from Malir River could may intrude into the excavation at certain areas, therefore proper shoring will be required to avoid danger of collapse of excavation. b- Depending on the permeability of the ground, water may flow into any excavation below the natural groundwater level. c- The supports to the side of the excavation should be designed to control the entry of groundwater and the design should take any additional water loading into account. d- Particular attention should be given to areas close to lakes, rivers and the sea. e- Water entering the excavation needs to be channeled to sumps from where it can be pumped out; however, the effect of pumping from sumps on the stability of the excavation should be considered. **Safety Measures for Excavation in Wet Weather** a- Weather conditions needs to be checked before daily work to be aware of rain and storm possibilities. b- Inspection of trenches to be done every day before construction begins. c- Workers will not be allowed to go near unprotected trenches. d- Heavy equipment will be kept away from trench edges. e- Workers will be trained to have the skills needed to identify wet weather hazards and how to minimize risks. f- Protective equipment will always be worn and in a correct manner. g- All power tools will be correctly maintained and used properly. h- Protective systems including benching, sloping, shoring, and shielding will be utilized. i- Planning and implementation of safety systems and inspections will be used regularly on the construction sites. **Other aspects of excavation safety**

No.	Work Activities and Associated Hazards	Mitigation Guidelines
		a- Safe means of getting into and out of an excavation will be provided. If a risk assessment identifies that ladders are a reasonable means of access and egress from an excavation, ladders with suitable length and of sufficient strength will be provided for the purpose. b- Use of petrol or diesel engines in excavations will be avoided without arranging for the fumes to be ducted safely away or through forced ventilation. **Inspection** a- A competent person who fully understands the dangers and necessary precautions will inspect the excavation at the start of each shift. b- Excavations will also be inspected after any event that may have affected their strength or stability, or after a fall of rock or earth. c- A record of the inspections will be maintained and any faults that are found should be corrected immediately. d- A written report will be made containing the following information: ◆ Location and description of the place of work or work equipment inspected; ◆ Date and time of the inspection; ◆ details of: ◆ Any matter identified that could give rise to a risk to the health or safety of any person; ◆ Any action taken as a result of any matter identified; ◆ Any further action considered necessary; and ◆ Name and position of the person making the report.
2.	**Excavators**[15] Most fatal and serious injuries involving excavators occur when the excavator is: ◆ Moving – and strikes a worker / pedestrian, particularly while reversing; ◆ Slewing – trapping a person between the excavator and a fixed structure or vehicle; or ◆ Working – when the moving bucket or other attachment strikes a worker or when the bucket inadvertently falls from the excavator. ◆ Most excavator related deaths involve a person working in the vicinity of the excavator rather than the driver.	**Controlling the risk** It is important to select the right excavator for the job. There are five main precautions needed to control excavator hazards. These are: a- **Exclusion:** People should be kept away from areas of excavator operation by the provision of suitable barriers. Bunting or fencing can be used to create and maintain a pedestrian exclusion area. b- **Clearance:** When slewing in a confined area the selection of plant with minimal tail swing is preferred. Clearance of over 0.5m needs to be maintained between any part of the machine, particularly the ballast weight, and the nearest obstruction. c- **Visibility:** Excavators with the best view around them directly from the driver position should be selected. Excavators should be equipped with adequate visibility aids to ensure drivers can see areas where people may be at risk from the operation of the machine. d- **Plant and vehicle marshal/banksmen:** A Plant and vehicle marshal/banksmen should be provided in a safe position to direct excavator operation and any pedestrian movements.

[15] https://www.hse.gov.uk/construction/safetytopics/excavators.htm

No.	Work Activities and Associated Hazards	Mitigation Guidelines
		e- **Bucket attachment:** Quick hitches can be used to secure buckets to the excavator arm. **Training and competence** There are three categories of people who must be trained and made competent regarding the excavator hazards and precautions: a- **Drivers:** should be trained, competent and authorized to operate the specific excavator. Training certificates from recognized schemes help demonstrate competence and certificates should be checked for validity; b- **Plant and vehicle marshal:** should be trained, competent and authorized to direct excavator movements and, where possible, provided with a protected position from which they can work in safety; and c- **Pedestrians:** should be instructed in safe pedestrian routes on site and the procedure for making drivers aware of their presence through sign boards and on-site instructions. **Inspection and maintenance** a- A program of daily visual checks, regular inspections and servicing schedules will be established in accordance with the manufacturer's instructions and the risks associated with each vehicle. b- Drivers will be advised to report defects or problems. Reported problems will be put right quickly and the excavator taken out of service if the item is safety critical.
3.	**Lifting Operations (Cranes)**[16] ◆ Collapse of the Crane – such incidents present significant potential for multiple fatal injuries, both on and off-site; ◆ Falling of the Load – these events also present a significant potential for death and major injury.	**Pre-requisite:** a- Cranes and lifting accessories such as slings will be of adequate strength, tested and subject to the required examinations and inspections. b- All crane operators, and people involved in slinging loads and directing lifting operations, will be trained and competent. **Planning lifting operations** a- All lifting operations will be planned so they are carried out safely with foreseeable risks taken into account. b- The person appointed to plan the lifting operation will have adequate practical and theoretical knowledge and experience of the lifts being undertaken. c- The plan will need to address the risks identified by a risk assessment, the resources required, procedures and the responsibilities so that any lifting operation is carried out safely. d- The plan will ensure that the lifting equipment remains safe for the range of lifting operations for which the equipment might be used. **Supervision of lifting** a- The right level of supervision will be in place for lifting operations, reflecting the degree of risk and personnel involved in the particular lifting operation.

[16] https://www.hse.gov.uk/construction/safetytopics/lifting-operations.htm

No.	Work Activities and Associated Hazards	Mitigation Guidelines
		b- The crane supervisor will direct and supervise the lifting operation to make sure it is carried out in accordance with the method statement. c- The crane supervisor will be competent and suitably trained and should have sufficient experience to carry out all relevant duties and authority to stop the lifting operation if it is judged dangerous to proceed. **Thorough examination** a- Lifting equipment will be thoroughly examined at the prescribed intervals. This will be a detailed and specialized examination by a competent person. b- Records of thorough examinations and tests will be: made readily available to the relevant authorities; secured; and capable of being reproduced in written form.
4.	**Heat Stress / Heat Stroke**[17] ◆ Workers who are exposed to extreme heat may be at risk of heat stress. ◆ Exposure to extreme heat can result in occupational illnesses and injuries. ◆ Heat stress can result in heat stroke, heat exhaustion, heat cramps, or heat rashes. ◆ Burns may also occur as a result of accidental contact with hot surfaces.	**Control of Heat Stress** Work practice recommendations include the following: a- Limit time in the heat and/or increase recovery time spent in a cool area. b- Use tools intended to minimize manual strain. c- Increase the number of workers per task. d- Train supervisors and workers about heat stress. e- Use a buddy system where workers observe each other for signs of heat-related illnesses. f- Require workers to conduct self-monitoring and create a work group (i.e., workers, a paramedic, and a safety manager) to make decisions on self-monitoring options and standard operating procedures. g- Provide adequate amounts of cool, potable water near the work area and encourage workers to drink often. h- Use a heat alert program whenever the weather service forecasts a heat wave. i- Institute a heat acclimatization plan and encourage increased physical fitness. **Training** Contractor will implement a heat stress training program for all workers and supervisors which will cover the following: a- Training of workers before hot outdoor work begins. b- Recognition of the signs and symptoms of heat-related illnesses and administration of first aid. c- Causes of heat-related illnesses and steps to reduce the risk. These include drinking enough water and monitoring the color and amount of urine output. d- Proper care and use of heat-protective clothing and equipment and the added heat load caused by exertion, clothing, and personal protective equipment. e- Effects of other factors (drugs, obesity, etc.) on tolerance to occupational heat stress. f- The importance of acclimatization.

[17] https://www.cdc.gov/niosh/topics/heatstress/recommendations.html

No.	Work Activities and Associated Hazards	Mitigation Guidelines
		g- The importance of immediately reporting any symptoms or signs of heat-related illness in themselves or in co-workers to the supervisor. h- Procedures for responding to symptoms of possible heat-related illness and for contacting emergency medical services. Supervisors will also be trained on the following: a- Implementing appropriate acclimatization plan. b- Procedures to follow when a worker has symptoms of heat-related illness, including emergency response procedures. c- Monitoring weather reports. d- Responding to hot weather advisories. e- Monitoring and encouraging adequate fluid intake and rest breaks. **Hydration** The Contractor will provide the means for appropriate hydration of workers and ensure that: a- Water should be potable, <15°C (59°F), and made accessible near the work area. b- Estimate how much water will be needed and decide who will get and check on water supplies. c- Provide individual drinking cups for each worker. d- Encourage workers to hydrate themselves. e- Workers should drink an appropriate amount to stay hydrated. f- For moderate activities in the heat that last less than 2 hours, drink 1 cup (8 oz.) of water every 15–20 minutes. g- If sweating lasts for several hours, drink sports drinks containing balanced electrolytes. h- Avoid alcohol and drinks with high caffeine or sugar. i- Generally, fluid intake should not exceed 6 cups per hour.
5.	**Confined Space Working**[18] The most likely hazards related to confined spaces include: ◆ A risk of fire or explosion can arise flammable substances and oxygen enrichment. ◆ Hot conditions can lead to a dangerous rise in core body temperature and this can be made worse by wearing PPE, highly physical or strenuous work. ◆ The presence of toxic gas, fume or vapour can lead to asphyxia or unconsciousness ◆ A lack of oxygen in the atmosphere may also lead to asphyxia or unconsciousness.	**Work in confined spaces** a- No person at work will enter a confined space to carry out work for any purpose unless it is not reasonably practicable to achieve that purpose without such entry. b- A site specific method statement will be produced by the Contractor and all workers will adhere to the method statement instructions before the work is carried out. c- It will be ensured that there is suitable ventilation within the workplace. d- Damaging any underground utilities will be avoided. e- It will be ensured that workers are provided with the following: ◆ Head, hand and foot protection ◆ Eye and hearing protection ◆ Waterproof and thermal clothing ◆ Respirators and breathing apparatus ◆ Appropriate safety harnesses. f- It will be ensured that Emergency arrangements such as First aid procedures, arrangements for the safety

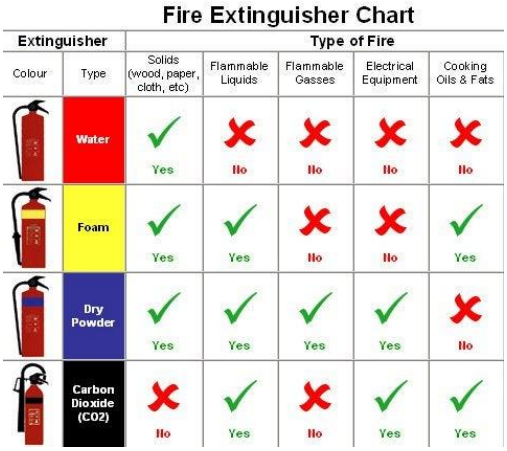
[18] https://www.hse.gov.uk/pubns/priced/l101.pdf

No.	Work Activities and Associated Hazards	Mitigation Guidelines
		of rescuers and mechanism of liaison with emergency services are in place before any work starts to make sure that the workers can be rescued safely if required. g- Those who are identified as rescuers need to be: ◆ Ready at hand ◆ Properly trained ◆ Fit to carry out their task ◆ Protected against the cause of the emergency ◆ Capable of using any equipment provided for rescue, for example breathing apparatus, lifelines and fire-fighting equipment. h- Training is critical in all work with confined spaces. The Contractor will ensure that all workers are given suitable and appropriate training to carry out the workplace task. This will include trainings on; emergency procedures and use of breathing apparatus.
6.	**Welding Safety**[19] There are a variety of welding methods available, all of which have inherent safety and health hazards associated with them, such as: a- Metal fumes are formed when a metal is heated above its boiling point and its vapors condense into very fine particles. Health effects can range from short-term illnesses such as metal fume fever with flu-like symptoms to longer-term issues such as lung damage or neurological disorders. b- Burns may be caused by contact with hot surfaces or hot flying particles. c- Eye injuries can result from exposure to ultraviolet and infrared radiation created from the arc or from particulates or spattering. d- Electric shock may occur due to improper grounding and/or contact with current through damp clothing, wet floors and other humid conditions. Even if the shock itself is not fatal, the jolt may still cause welders to fall from their work positions. In addition, stray welding current may cause extensive damage to equipment,	**Safety Measures** The Contractor will ensure the following: a- Welders, bystanders and work space are properly protected. b- Use of local exhaust ventilation, such as an exhaust trunk, while performing welding activities whenever possible to minimize exposures to welding fume. c- Use of respiratory protection below the recommended air quality levels. d- Protecting worker's exposures to UV and infrared radiation by providing a properly fitted welding helmet, with proper grade of filter plate while ensuring that it must be worn. An auto-darkening welding helmet is highly recommended as these helmets do not need to be raised to check welds and can be kept in the lowered position all the time, reducing fume exposure. These helmets also reduce the urge to use the neck muscle to flip the helmet to the "up" position, which can cause significant neck discomfort and possible injury. e- Safety glasses should also be worn under the welding helmet to provide impact protection and to protect eyes from particulates when hoods are lifted. f- Pant cuffs and rolled up sleeves should be avoided. g- Workers will be trained to protect their body from spatter and arc flash with flame-resistant gloves and apron or jacket, flame-resistant natural fiber clothing (such as wool or cotton) and leather boots etc. h- Any combustible or flammable materials will be put away from the welding area to prevent fires. i- A clear egress path will be maintained out of the welding area as well as to the nearest emergency equipment such as fire extinguisher, emergency eyewash and emergency shower. j- Check welding equipment and personal protective equipment (PPE) for defects and damage before

[19] https://www.hse.gov.uk/welding/index.htm

No.	Work Activities and Associated Hazards	Mitigation Guidelines
	buildings and electrical circuits. e- Fire caused by heat, sparks, slag or flames contacting combustible or flammable materials in the welding area. f- Improper use and storage of oxygen and acetylene may result in fire or explosion g- Strains, neck and lower back injuries resulting from repetitive motions and work orientation. h- Lacerations resulting from accidental contact with sharp edges and burrs.	beginning work. Ensure PPE is properly stored and maintained when not in use. k- Position welding curtains as needed to protect others in the area from splatter, flash and glare. l- Setting up any signs or safety cones as needed. m- Prevent lacerations by identifying sharp edges and burrs, wearing appropriate gloves, deburring, and proper storage methods. n- Ensure good insulation from work surfaces, the electrode, the electrode holder and grounding surfaces is obtained and maintained. o- Practice good lifting techniques by workers and considering ergonomics when setting up the work and minimizing awkward postures. p- Workers will be trained on the safe use, transportation and storage of compressed gases prior to use.
7.	**Construction Dust**[20] a- Drilling, cutting, sanding and driving over dusty areas can pose risks for the workers involved. b- Dust that can enter the nose and mouth during breathing is referred to as 'total inhalable dust'. Some dust may consist of larger or heavier particles that tend to get trapped in the nose, mouth, throat or upper respiratory tract where they can cause damage. c- Chronic effects of dust in the lungs are usually permanent and may be disabling, so prevention of the onset of disease should be given the highest priority.	**Control Measures** a- Contractor will ensure that workers are protected from excessive exposure to dust. a- Keep construction areas will be kept as clean as possible. b- Workers will be provided with clothing that resists dust and essential PPEs. c- Working shifts will be rotated to limit inhalation of polluted air by workers specially the potentially dusty work sites. d- Dust will be suppressed and dampen at project sites by sprinkling water. e- Construction vehicles will be driven at slow speeds to keep dust emissions limited. f- Contractor will provide construction workers with information / training about potential dust hazards and instructions on how to avoid them. g- Workers will be trained to wet the tools before cutting into any materials as it can reduce dust accumulation.
8.	**Construction Noise**[21] a- Exposure to high levels of noise can cause permanent hearing loss. b- Loud noise can create physical and psychological stress, reduce productivity, interfere with communication and concentration, and contribute to workplace accidents and injuries by making it difficult to hear warning signals.	**Control Measures** a- As a first step, the Contractor will choose quieter equipment and machinery to save the cost of introducing noise-reduction measures and providing hearing protection, health surveillance and associated trainings etc. b- Hearing protection will be issued to employees: ◆ where extra protection is needed above what has been achieved using noise control ◆ as a short-term measure while other methods of controlling noise are being developed. c- Contractor will make sure that the protectors give enough protection - at least to get below 85 dB at the ear. d- Use of protectors to the noisy tasks and jobs in a working day will be made mandatory.

[20] https://www.hse.gov.uk/construction/healthrisks/hazardous-substances/construction-dust.htm
[21] https://www.hse.gov.uk/noise/hearingprotection.htm

No.	Work Activities and Associated Hazards	Mitigation Guidelines
		e- No employee should be exposed to a noise level greater than 85 dB (A) for a duration of more than 8 hours per day without hearing protection. f- Periodic medical hearing checks will be performed on workers exposed to high noise levels.
9.	**Fire Safety** a- Fire at a construction site can endanger the lives of workers and others who happen to be on the site. b- A fire during the course of construction also can result in severe structural damage; destruction of machinery, equipment or materials; and untimely delay in project completion.	**Control Measures** a- The Contractor will develop an effective fire prevention and extinguishing plan before the onset of construction. The plan will be put into practice as soon as construction operations begin and will be closely followed throughout the course of construction. b- Contractor will ensure that fire safety and firefighting trainings are provided to selected workers from each worker groups so that they can handle the localized fires. c- Contractor will ensure the availability of right fire extinguishers at project construction and campsites to deal with different types of fires in accordance with the following chart:  d- The local fire department will be made aware of construction plans and kept up to date during the course of construction regarding items such as access to the sites during both working and non-working hours; and the location of fuel storage, power and fuel shutoffs, power generators, and fixed-fire extinguishing systems. e- The project requires considerable works related to welding. Cutting and welding sparks cause more construction fires than any other ignition source. The personnel responsible for fire safety will ensure that adequate precautions are taken during welding works and adequate numbers of fire extinguishers are present in proximity to the work areas. f- Suitable fire extinguishers are Carbon Dioxide or Dry Powder because of the risk of electrical fires in the welding area, whereas use of water based extinguisher will be avoided. g- Fuel gas and oxygen cylinders will be placed upright and secured at safe locations, protected from high

No.	Work Activities and Associated Hazards	Mitigation Guidelines
		temperatures and adequately separated from each other.

5. Emergency Preparedness and Response Plan (EPRP)

The Contractor will be responsible for ensuring adequate emergency preparedness and response planning for the construction phase of the project. Following Table presents the contents to be covered under EPRP.

Impact to be addressed	Management/Mitigation/ Enhancement to be included in plan	KPI
Construction phase emergency preparedness and response plan, including flooding, medical emergencies etc.	◆ Develop and implement a regularly updated EPRP so that project staff, relevant local authorities and emergency services are prepared to respond to accidental and emergency situations in a manner that prevents and mitigates harm to people and the environment. The EPRP will include: ◆ Identification of accidents and emergency situations and the communities and individuals that may potentially be impacted. ◆ Identification of response procedures, provision of equipment and resources, designation of responsibilities, communication systems and channels and periodic response training ◆ Routine inspection of work sites ◆ Maintenance of plant, equipment, supplies and materials required for preventative measures and emergency responses ◆ Clearly defined evacuation procedures ◆ Training requirements for staff and managers, including details on who provides training ◆ Identification of relationship to and integration with other plans ◆ Identification of revision timeframe and process ◆ Template for incident reporting forms ◆ Identify a set of procedures to assist in rapid and early identification and responses to potential and occurring emergencies relevant to the construction phase. These are likely to include categories such as: ◆ Flooding ◆ Equipment failure or malfunctioning ◆ Seismic activity ◆ Terrorism ◆ Address specific situations such as emergencies occurring: ◆ In the dark: with extra attention on emergency power sources, backup lighting systems, mobile lighting for response teams ◆ In adverse weather: with extra attention placed on emergency shelter and clothing for responders, and shelter for evacuees	◆ Records of training drills ◆ Disclosure of EPRP to affected communities, emergency services and operations workers ◆ Type, duration and adequacy of emergency response in specific situations

Impact to be addressed	Management/Mitigation/ Enhancement to be included in plan	KPI
	◆ Produce detailed information on internal and external equipment, personnel, facilities, funding, expert knowledge and material that will facilitate appropriate responses to specific types of emergencies ◆ Identify procedures for using, inspecting, testing and maintaining emergency response equipment, which may include equipment under the control of third parties (such as local fire brigades or emergency medical teams) ◆ Produce inundation maps that will be provided to aid evacuation plans and be distributed to local authorities ◆ Develop a rescue and relief plan to cover actions required in the event of a flood. This will include details on: ◆ Support for evacuees to provide food, fuel and shelter ◆ Securing potable water supplies to affected areas ◆ Identification of buildings for use as relief camps ◆ Identification of health facilities and contact details of key personnel	

6. Workers Camp Management Plan

Contents to be covered in the plan by the Contractor include the following:

Impact to be addressed	Management/Mitigation/ Enhancement to be included in plan	KPI
Construction worker well-being in accommodation facilities Community, health, safety and security and relations/conflict between workers and host communities	◆ Describe the minimum national legislative requirements plus the applicable international requirements relevant to the facility standards and management of labour accommodation – these are aligned with the WBG guidance note on workers accommodation[22]. ◆ Describe standards to be met that will avoid safety hazards and protect workers from disease, illness, exposure to natural hazards, including but not limited to ◆ Types and materials of living facilities ◆ Provision of minimum amounts of space for each worker ◆ Adequate drainage, dormitories, bed and storage ◆ Provision of sanitary, laundry, cooking and medical facilities and potable water	◆ Worker accommodation plan compliant with the WBG guidance note on workers' accommodation ◆ Types of accommodation (on site, offsite) ◆ Number of accommodated employees and rooms ◆ Ratio of facilities to workers ◆ Accommodation inspections ◆ Worker and community grievances

22 Workers' Accommodation: Processes and Standards, September 2009 - https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/publications_gpn_workersaccommodation

Impact to be addressed	Management/Mitigation/ Enhancement to be included in plan	KPI
	◆ Location of accommodation in relation to the workplace ◆ Any health, fire, safety or other hazards or disturbances and local facilities ◆ Provision of first aid and medical facilities ◆ Heating and ventilation ◆ Workers freedom of movement to and from the employer-provided accommodation will not be unduly restricted ◆ Include an accommodation code of conduct with rights, rules and regulations for workers' accommodation ◆ Identify a grievance and maintenance response mechanism for the accommodation facilities and services	◆ Disease type / incidence, and lost time impacts ◆ Water / food quality inspections test results ◆ Waste segregation and appropriate disposal monitoring results ◆ Hygiene inspection results

7. Waste Management Plan

The waste management plan will identify predicted waste streams, appropriate handling, reuse and recycle opportunities and, as a last resort, disposal methods. Contents to be covered in waste management plan by the Contractor include the following:

Topic to be addressed	Management / mitigation/ enhancement to be included in plan	KPI
General waste management plan requirements	◆ Identify predicted waste streams, appropriate handling, reuse and recycle opportunities and, as a last resort, disposal methods. ◆ Prepare in accordance local waste regulations and the WBG EHS Guidelines for Construction Materials Extraction (2007), the WBG General EHS guidelines ◆ Cover all waste streams from the project (solid, liquid, hazardous, non-hazardous), for all activities, including construction works and worker facilities and accommodation. ◆ Develop a waste management system reflected in the plan that addresses issues linked to waste minimisation, generation, transport, disposal, and monitoring including: ◆ Contractor training requirements with respect to waste handling procedures ◆ Waste generation data collection for each waste stream by volume. This will include the proportion of each waste stream going for reuse, recycling or disposal. Any unusual waste volumes will be investigated ◆ An audit schedule which details the frequency of waste management audits and those responsible for undertaking them ◆ Procedure for reporting any environmental incidents related to waste ◆ The specific regulatory licensing and reporting requirements as they relate to waste.	Waste record completion Recycling rates Amount of waste generated by stream

Topic to be addressed	Management / mitigation/ enhancement to be included in plan	KPI
	◆ A map showing each temporary waste storage location for the Project ◆ Strict conditions on handling and storage of fuel, explosives, and chemicals will be imposed on the Contractor and suppliers to prevent accidental pollution and injury. ◆ Procedures for, and identification of, licensed contractors to collect, transport and dispose of waste ◆ If any waste facilities are developed detailed management plans would be required following national and international standards.	
Waste segregation	◆ Segregate wastes in designated storage areas, such that hazardous and non-hazardous wastes are not mixed and to allow for recycling and reuse where appropriate ◆ Segregate hazardous waste (such as oils, lubricants, batteries, chemicals and medical waste) from other waste types to avoid cross contamination ◆ Label waste streams for identification and warning purposes	No non- compliances of waste being mixed identified in inspections
Storage requirements	◆ Correctly identify wastes and stored pending collection/transfer for reuse, recovery, recycling or disposal in an environmentally sound manner ◆ Locate waste storage areas on areas of impermeable hard standing to prevent leaching of any contaminants should spillage or leakage occur ◆ Identify a suitable method to cover all skips ◆ Store liquid wastes/oil/chemicals in tanks or drums located in bunded areas which can hold 110% of the capacity of the largest tank or drum or, for multiple drum storage, 25% of the total volume of material stored ◆ Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from site ◆ Store hazardous waste in closed containers away from direct sunlight, wind and rain in designated storage areas. Limit access to hazardous waste to those who have received training. ◆ Provide adequate ventilation where volatile wastes are stored, safety datasheets. ◆ Have spill management equipment (spill kits, eyewash stations, PPE) and readily available information on chemical compatibility for workers including labelling each container, demarcation of the area (e.g. on a facility map/site plan) ◆ Include visual and emissions management measures implemented as appropriate (e.g. screening)	◆ No non- compliances with management measures identified ◆ No spillages resulting from chemical storage in bunded areas.
Handling and transportation	◆ Train staff to carry out handling and storage	◆ All staff involved with waste management trained on waste

Topic to be addressed	Management / mitigation/ enhancement to be included in plan	KPI
	◆ Make available and maintain spill response equipment in areas where hazardous wastes may be spilt ◆ Train an appropriate number of site personnel in spill response techniques ◆ Prepare and implement spill prevention and response plan and emergency preparedness and response plan to address any accidental release and leakage ◆ Assign each waste shipment a unique waste consignment number. The Contractor is responsible for ensuring that a register is kept at site recording all waste shipments leaving the site and their disposal destination ◆ Ensure a waste transfer note accompanies all waste consignments from the construction site to the disposal destination ◆ Confirm that contractors handling, treating, and disposing of hazardous waste are reputable and legitimate enterprises, licensed by the relevant regulatory agencies and following good international industry practice for the waste being handled ◆ Design transportation of waste to minimise and prevent spills releases or exposures to workers, the public or the environment. ◆ Secure and label waste containers designated for off-site shipment with the contents and associated hazards ◆ Confirm that the waste containers are correctly loaded on the transport vehicles before leaving the site, and that they are accompanied by relevant documentation that describes the load and its associated hazards, consistent with the reference framework.	management and materials handling ◆ No spills
Recycling and reuse	◆ Evaluate waste production processes and identify potentially recyclable materials ◆ Investigate external markets for recycling ◆ Establish recycling objectives and formal tracking of waste generation and recycling rates ◆ Provide training and incentives to employees	Recycling targets included in plan and audited against.
Disposal	◆ Use offsite waste treatment or disposal facilities appropriately permitted, or if not available based on the most suitable site in consultation with authorities ◆ Do not release the waste if there is concern about the standard of transport or destination of the waste ◆ Dispose of any medical waste at licensed facilities ◆ Do not permit burning of waste	◆ Permits held for waste treatment and disposal sites ◆ Medical waste licensed facilities records kept
Wastewater management	◆ Establish wastewater management system for worker and facilities wastewater. Treated water discharged in line with WBG and national limits, or tankered off site to	◆ Wastewater treated in line with relevant standards

Topic to be addressed	Management / mitigation/ enhancement to be included in plan	KPI
	appropriate licensed treatment facility or Include appropriate capacity of septic tank ◆ Include the importance of using project toilets and related procedures in site induction procedures.	◆ No effluent not meeting standards discharged.
Contaminated materials or areas	◆ Develop procedure to identify, manage and remove any identified contaminated land as part of construction areas	◆ Any contaminated soils or ground managed in line with national and international requirements. ◆ Minimization of pollution to ground and surface water resources

8. Traffic Management Plan

Contents to be covered in traffic management plan by the Contractor include the following:

Impact to be addressed	Management / mitigation/ enhancement to be included in plan	KPI
Reduced road safety and impacts upon communities	◆ Undertake a road safety awareness programme along the main site access routes in coordination with PIU ◆ Provide information regarding construction activities and activities to stakeholders ◆ Plan and coordinate transport timings to minimise bottlenecks and avoid peak high-risk periods (e.g. school runs).	◆ Implementation of road safety awareness program along main site routes ◆ Provision of construction information to communities / stakeholders regarding construction activities. ◆ Quarterly stakeholder consultation meetings
Reduced road safety	◆ Train drivers fully in road safety and appropriately licensed certified and medically fit to operate the class of vehicle and for the vehicle's operation on and off site. ◆ Implement a no tolerance policy to alcohol and drugs including testing of drivers. ◆ Prohibit hand-held cell phones and radios while driving	◆ Inspect contractor's licences ◆ Inspect transportation contractors for knowledge and compliance with the traffic management plan
	◆ Ensure all vehicles are road worthy, drivers made aware of the potential risks as part of training. ◆ Include fatigue management as part of training ◆ Review likelihood of local workers using motorcycles as means of transportation to and from work or during off hours and decide whether such use is permitted and conditions for doing so, in particular use of helmets and possibly other protective gear.	◆ Vehicle inspections undertaken monthly
	◆ Undertake routine vehicle inspections and monitoring on an on-going basis	

Impact to be addressed	Management / mitigation/ enhancement to be included in plan	KPI
	◆ Use hazard identification and risk assessment for vehicles on a regular basis ◆ Prohibit vehicles will be prohibited from being overloaded ◆ Utilize low emissions vehicles for the transportation of materials (wherever practicable) ◆ Install seat belts and require they are worn by all occupants	
	◆ Use licensed contractors for waste and fuel transportation ◆ Undertake due diligence of subcontractors (e.g. those bringing equipment to site), and adequately brief them on the traffic management plan. ◆ Include clauses related to traffic management plan implementation and use of qualified drivers in contracts.	◆ Inspect contractor's licences ◆ Inspect transportation contractors for knowledge and compliance with the traffic management plan
	◆ Require adherence to all national and specific area speed limits ◆ Impose and monitor speed restrictions for project traffic ◆ Organize delivery schedules are reasonable and achievable to prevent speeding by drivers	◆ Monitor vehicle speeding and driver's schedules
	◆ Designate crossing points along the access roads based on consultation with local communities	Designated crossing points implemented.
	◆ Erect road signs to i. clearly indicate the route of construction traffic and speed limits, ii. identify where the road is single carriageway about the dangers of overtaking and iii. be in accordance with local laws and rules ◆ Appoint and locate flag staff at intersections in the case of intensive traffic ◆ Where the access roads join the main road, erect illuminated and flashing signs to warn road users of the crossing points ◆ Restrict night-time use of road for large vehicles	◆ Erect traffic and road safety signs along project routes in-line with local laws ◆ Flag staff at intersections. ◆ Illuminated / flashing signs at crossing points
	◆ Put in place an action plan in case of an accident ◆ Communicate the action plan to all drivers ◆ Report and investigate all accidents and incidents/	◆ Action plan in place and training provided. ◆ Any incidents/accidents responded to rapidly and in line with GIIP including investigations undertaken and measures to prevent reoccurrence identified and implemented within short timeframes
	◆ Implement no-driving policy at night except for exceptional circumstances	◆ No road traffic incidents at night

Impact to be addressed	Management / mitigation/ enhancement to be included in plan	KPI
	◆ Prohibit traffic movements during extreme weather conditions such as heavy rainfall, to avoid potential road accidents associated with driver's visibility and road hazards ◆ Require all loads to be secured ◆ If road crossing is required, schedule movements to ensure that vehicles arrive and leave at the same time (two-way movement) ◆ Fit vehicles with warning alarms for reversing ◆ Maintain site vehicles in accordance with the manufacturer's instruction, with catalytic converters installed and maintained. Older construction vehicles to be replaced with more fuel-efficient ones. ◆ Enforce a 'no-idling' policy. ◆ Do not allow parking outside of site areas (e.g., along local roads)	◆ No road traffic incidents in extreme weather ◆ No complaints about vehicle emissions

9. Spill Prevention and Response Plan

Contents to be covered in Spill Prevention and Response Plan by the Contractor include the following:

Topic to be addressed	Management / mitigation/ enhancement to be included in plan	KPI
Spill prevention and response plan	◆ Develop a spill prevention and response plan to follow GIIP and include: ◆ Procedures for immediate spill response actions specified for all relevant scenarios relating to hazardous materials used in the construction processes. ◆ Complete list of equipment available for use in emergency situations. ◆ Procedures for immediate information to authorities in case of discharges and standards for reporting irregular events. ◆ Programme for training key staff in emergency responses. The training is to be based on various emergency scenarios.	No pollution events

10. Pollution Prevention Plan

Contents to be covered in Pollution Prevention Plan by the Contractor include the following:

Impact to be addressed	Management / mitigation/ enhancement to be included in plan	KPI
Dust	◆ Use covers and/or control equipment such as water suppressors	◆ No excessive dust levels reported in visual inspections ◆ No dust related grievances
Dust resuspension on unpaved roads	◆ Implement dust suppression techniques on unpaved roads, such as applying water or	◆ No excessive dust levels reported in visual inspections.

Impact to be addressed	Management / mitigation/ enhancement to be included in plan	KPI
	non-toxic chemicals to minimise dust from vehicle movements ◆ Compact and periodically grade and maintain all construction roads ◆ Enforce a speed limit for heavy goods vehicles (HGVs) on-site at 20km per hour	◆ No dust related grievances ◆ No reports of speeding
Dust from open area sources, including storage piles	◆ Use control measures such as installing enclosures and covers, and increasing moisture content ◆ Use vegetation on exposed surfaces of stockpiled materials	◆ All stockpiles are enclosed or covered. ◆ No non-compliance recorded in visual inspections
Emissions from burning materials	◆ Prohibit bonfires and burning of waste materials	◆ No burning of waste materials
Emissions from generators	◆ Consider the location and height of exhaust pipes to ensure proper dispersion of pollutants ◆ Use generators of a modern design and keep them well maintained	◆ Generators of modern design and in good working order
Dust emissions from cement batching plant	◆ Contain and arrest the dusty processes ◆ Suppress dust using water or proprietary suppressants that are fitted with a low-level water supply alarm. ◆ Protect external sources, such as stockpiles and external conveyors, from wind whipping by dampening or covering during the delivery, storage, and handling of crushed rock/sand/coarse aggregate	◆ All stockpiles are enclosed or covered. ◆ No dust related grievances. ◆
Emissions from construction vehicles	◆ Implement the manufacturer recommended engine maintenance programs regardless of the size or type of vehicle ◆ Instruct drivers on the benefits of driving practices that reduce both the risk of accidents and fuel consumption, including measured acceleration and driving within safe speed limits ◆ Enforce a ‘no-idling’ policy ◆ Replace old construction vehicles with newer more fuel-efficient alternatives where possible ◆ Convert high use vehicles to cleaner fuels where possible ◆ Install and maintain emission control devices such as catalytic converters	◆ Maintain records of the engine maintenance programmes for all vehicles ◆ Records of driver training maintained ◆ No idling vehicles noted during site inspections ◆ Newer more fuel-efficient vehicles recommended onsite
Noise and vibration due to construction traffic on existing roads	◆ Manage project vehicles to not wait or queue up with engines running at the entrance to the site access or on the public roads ◆ Maintain vehicles ◆ Restrict deliveries to be within working hours of the site minimising significant movements during sensitive times ◆ Use adjustable or directional audible vehicle-reversing alarms or use alternative warning systems, e.g. white noise alarms (including arrangements to minimise the need to perform reversing manoeuvres) ◆ Avoid unnecessary revving of engines, reducing speed of vehicle movement and	◆ Construction traffic use identified routes ◆ No community grievances raised with respect to construction traffic-related noise

Impact to be addressed	Management / mitigation/ enhancement to be included in plan	KPI
	maintaining the condition of the road surface to avoid body slap from empty lorries, designing and maintaining access routes to minimise vehicle noise. ◆ Explain and train drivers to minimise vehicular noise impacts	
Noise complaints	◆ Investigate noise and vibration complaints raised using the project grievance mechanism	◆ Complaints are satisfactorily resolved in line with timeframes given in the grievance mechanism ◆ No further complaints regarding previous resolved issues are received
Noise from construction activities	◆ Restrict access of the general public to the site access road and transmission line construction zone	◆ No incidents of members of the public accessing the restricted zone
Noise from construction works	◆ Use site terrain, material stockpiles and suitable work locations to screen work locations and maximise the distance between work activities and nearest noise sensitive receptors.	◆ Noise levels to not exceed threshold values
Noise from construction activities	◆ Where feasible, prioritise noisy activities to be undertaken in the daytime (i.e. avoid night working)	◆ Night-time noise levels do not exceed threshold values

11. Material Transportation Plan

Aspects to be covered under this plan includes the following:

Inbound transportation logistics: Inbound transportation is highly sensitive to a reciprocal relationship between cost and time. Products and machinery have to be available exactly when needed. Delayed deliveries can stop production while early arrivals can make material and equipment management stressful.

Outbound transportation logistics: No matter how detailed the logistics plan is, there will always be some excess material that needs returning. Rented construction equipment also has to go back to the dealer promptly to avoid unnecessary costs. Part of outbound transportation logistics also includes waste disposal.

Construction material logistics: Different construction materials arrive at different milestones throughout the project, requiring skilled coordination to ensure a smooth workflow. Good material logistics also account for the true costs involved in transporting materials, such as truck rental fees, operating costs and fuel expenses. Included in material logistics is also the cost associated with loading and offloading.

Construction equipment logistics: Having a construction material logistics plan starts with knowing what machinery and attachments are required for specific tasks. Equipment logistic plans also identify timeframes when vital tools have to be sourced, transported, used and returned.

Site management logistics: Construction manager has to prepare sites to accept deliveries as they arrive and have the resources present to efficiently deal with removing items from trucks, securely storing them and having them available precisely when needed. Any break in logistical chain links could result in lost time. Good site management plans account for every logistical step required for smooth trucking to and from construction sites.

Communication logistics: Clear and concise communications are the key to successfully executing construction material and equipment logistic plans. Everyone involved in the supply chain needs to know what their role is and when they're required to fulfill it.

Regulation logistics: Good logistic plans account for regulatory compliance both on and off the road. Safety should be the number one concern for all construction managers who develop logistic plans. Failing to safely transport construction materials can have devastating consequences. However, tragic accidents can be prevented by knowing all transportation regulations and building strict compliance into a logistics plan.

Annexure - 6: Analysis of Alternatives

The main project interventions include the installation of water and sewerage infrastructure in selected Katchi Abadis therefore scope of alternative studies is very limited. This chapter discusses the no project alternative as well as provides an overview of the technologies that have been considered by the Technical Consultants for chlorination at pumping stations to be installed at Katchi Abadis for the water treatment and recommend the most suitable set of options.

No Project Alternatives

If 'no project' option is triggered, the selected Katchi Abadis will continue to face:

1. Health hazards: The lack of proper sanitation facilities lead to the spread of diseases like cholera, dysentery, typhoid fever and further health problems.
2. Environmental degradation: Without proper sewerage systems, sewage overflowing at streets pollute groundwater, intrude into water lines and contaminates soil causing environmental degradation.
3. Poor living conditions: Lack of access to clean water and sanitation facilities can lead to poor living conditions, as people may be forced to live in unsanitary conditions, resulting in discomfort and illness.
4. Social unrest: The lack of basic services can lead to frustration and social unrest among residents, which can cause conflicts and potentially escalate to violence.

Thus, the 'no project' option is not viable.

Comparison of Disinfection Technological Alternatives in terms of Environmental Benefits

Background

KWSC's existing water lines will be utilized as a source of water for each Katchi Abadi. Underground and overhead reservoir tanks will be provided at each Katchi Abadi to ensure a reliable and consistent supply of water. Water will be taken from the KWSC's existing line, stored into underground tank (UGT) and pumped to the overhead reservoir (OHR) for subsequent supply through the distribution main to the end users by gravity. In the distribution main, the water will be disinfected through 'Point of Entry (POE)' type disinfection system. POE systems are installed at the primary water line where the main water line enters the distribution system. In Katchi Abadis, this entry point will be the distribution main after OHR. POE systems offer high-capacity filtration and can treat up to several thousand gallons of water per day. Major components related to proposed water supply system include High Density Polyethylene (HDPE) pipelines ranging from 02 to 08 inches, underground reservoir tank, overhead reservoir tank and pump house equipped with pumps and POE disinfection system based on hypo-chlorine dosing. Gate valves and water meters are proposed to be installed at each Katchi Abadi to control and monitor the flow of water. Full Bore or In-Line Electromagnetic Type Water Meters have been selected for installation due to their accuracy and precision.

Selection of Disinfection Technology for Katchi Abadis Pump Houses

Following three options have been assessed for the selection of feasible disinfection option for pump houses:

a) Gas Chlorination System

Chlorine is produced at the manufacturing plants in gaseous form and then it is transformed into liquid form under pressure. It is stored in cylinders and supplied to water treatment facilities for use as a powerful disinfectant. Because of being highly toxic, it is required to observe high safety procedures and utmost care in its handling. It has severe effects on the health of workers involved in its handling, if required precautions are not taken. The pressurized containers are to be handled with extreme care as they may explode and cause fatal accidents. Use of gas chlorination is declining because of many reasons like, risks involved in its handling, damage to the installations due to excessive corrosiveness causing high maintenance cost and health risk to the staff handling the system without wearing masks. In view of the above-mentioned facts the option of using gas chlorination system at distribution pumping stations located in densely populated areas has been ruled out. **Figure A6-1** shows the process flow of a gas chlorination system.

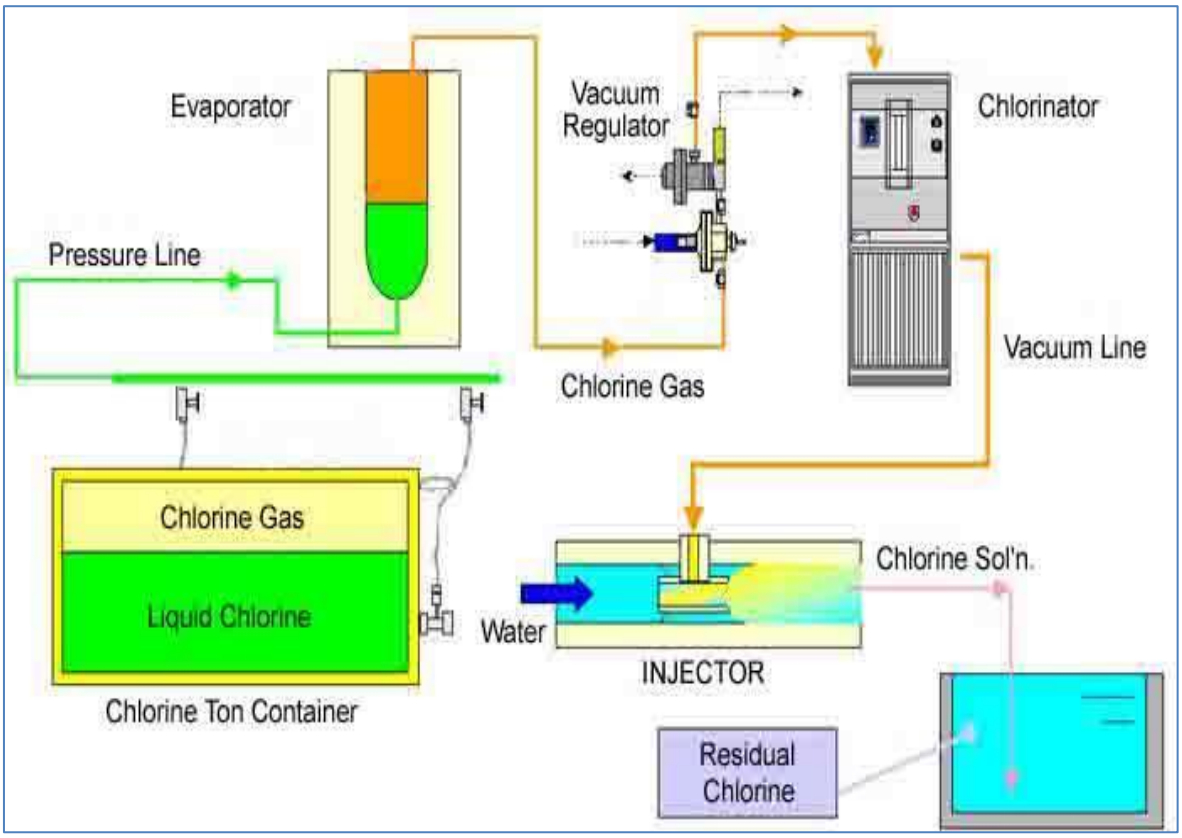


Figure A6-1: Gas Chlorination System

b) Chlorine Dioxide Dozing

Another means of ensuring the sterility of drinking water is to use chlorine dioxide as a disinfectant. Chlorine dioxide is effective against all types of germs and has a long dwell time in the piping system, which means it disinfects even without re-dosing. Chlorine dioxide is generated at site using diluted

solutions of sodium chlorite (NaClO2 7.5 %) and hydrochloric acid (HCl 9 %). The chlorine dioxide solution produced is stored in an integrated or external batch tank and is added to the potable water line as required using the integrated dosing pump or an external dosing pump. One of the major disadvantages of the chlorine dioxide system is very unstable and when it comes in contact with sunlight, it decomposes. Selection of this type of chlorination has been ruled out due to the instability of Chlorine Dioxide, hazards of handling the HCl as well as higher cost of the system as compared to others. **Figure A6-2** shows the process flow of a chlorine dioxide system.

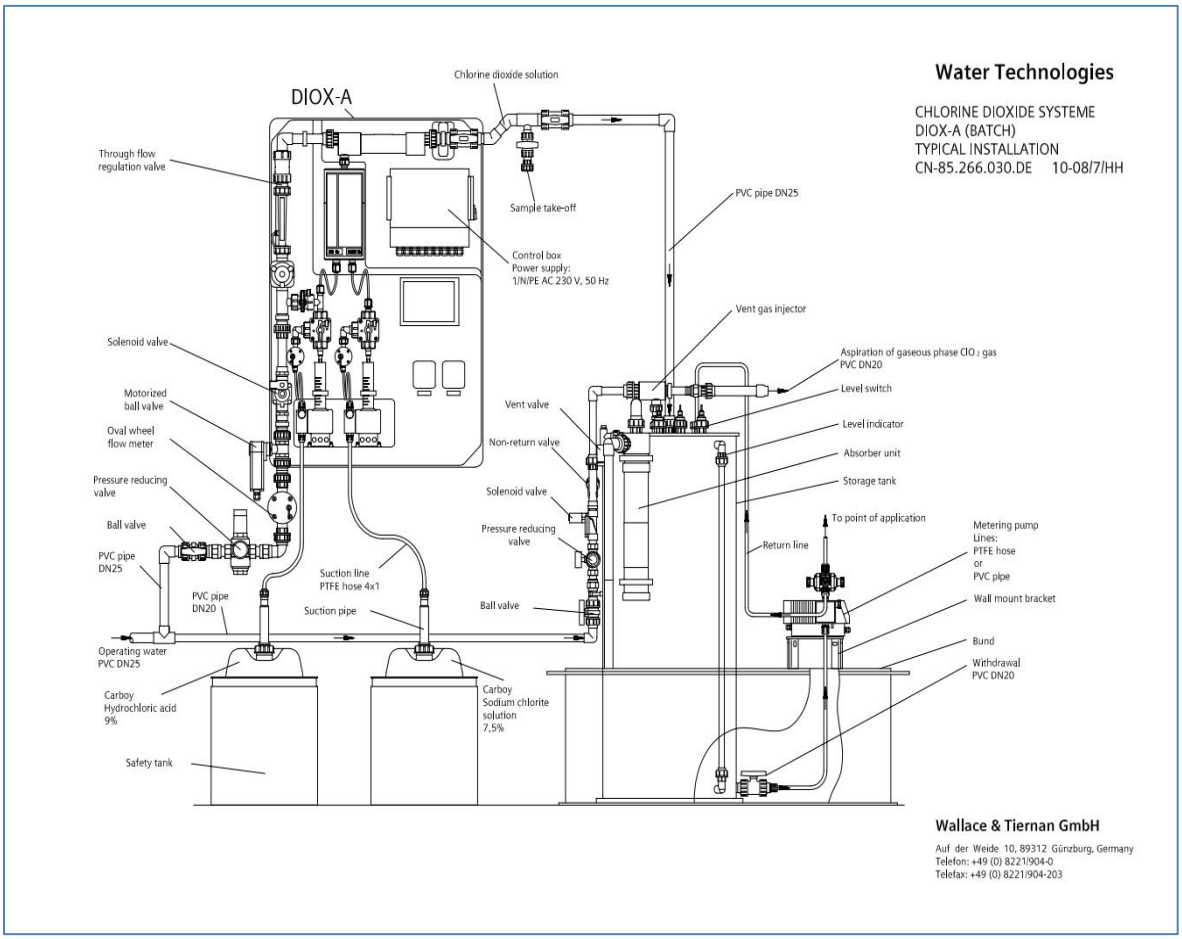


Figure A6-2: Chlorine Dioxide System

c) Hypo-chlorination System

Disinfection with sodium hypochlorite has similar disinfectant efficiency and residual performance as of gas chlorination system, however with the benefit of having no hazards associated with the handling and storing of chlorine gas, which gas chlorination has. Installation and O&M cost of hypochlorite dozing systems is also less than that of gas chlorination systems.

The hypo-chlorination system will comprise of a storage tank, a small positive displacement diaphragm pumps, chlorine analyzer and associated electronic control system such as programmable logic controller (PLC). Sodium hypochlorite solution stored in fiber glass tank or plastic tanks will be added to filtered water through dozing pumps. **Figure A6-3** shows the process flow of a hypo-chlorination system.

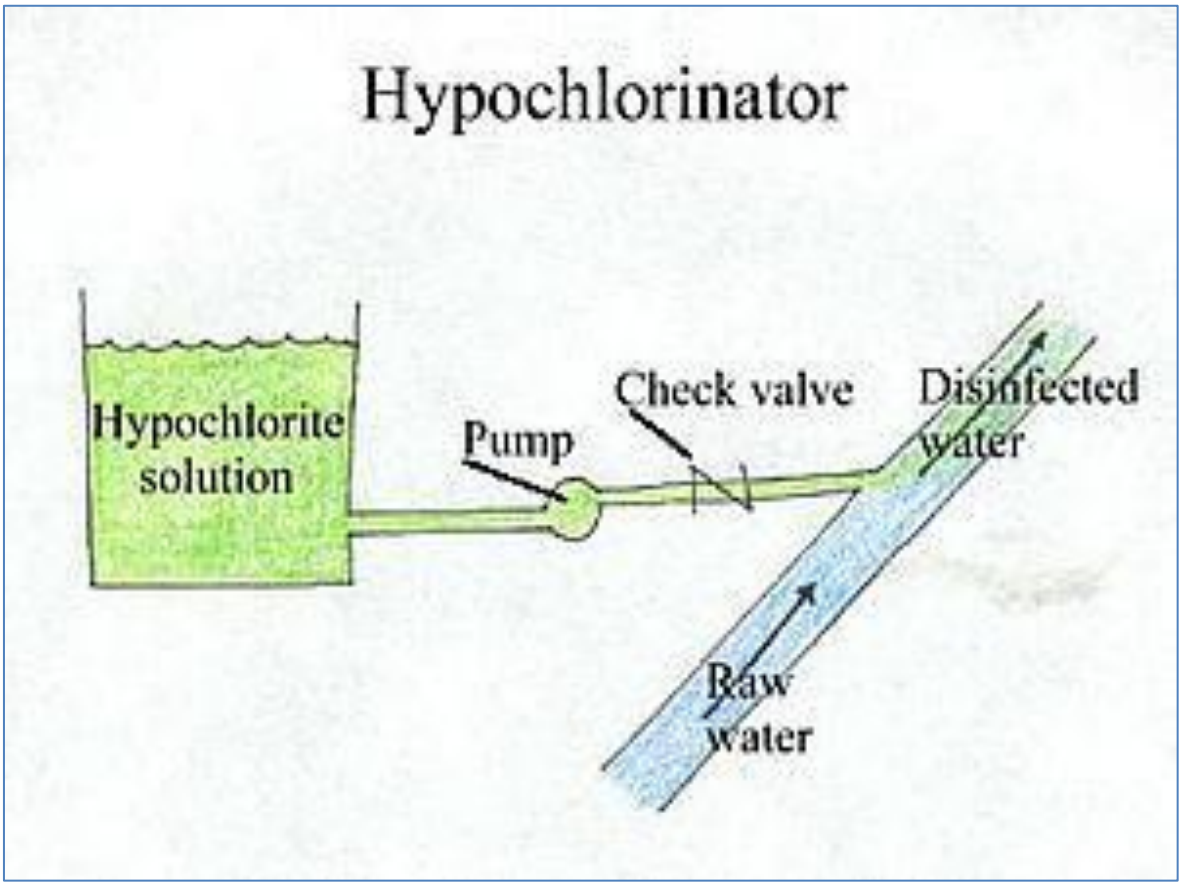


Figure A6-3: Hypo-chlorination System

Selected Option for Disinfection

Keeping in view the pros and cons as well as the cost factors, the Technical Consultants have opted for the installation of chlorination system based on Sodium Hypochlorite injection at the Katchi Abadis pump houses. Hypo-chlorination has many advantages over gas chlorination, like low capital / operating expenditures, lower safety measures required, ease of storage and handling, low exposures / risks and much lower corrosive effect. Manufacturers of dilute solution of sodium hypochlorite of 5 to 12.5% concentration are locally available which provide sodium hypochlorite in plastic cans, as small quantities will be required during operations.

Annexure - 7: Grievance Redress Mechanism

Principles

A GRM is established to address any complaints or grievances arising during the implementation period of the projects. People of the project area may perceive risks to themselves or their property or their legal rights or have concerns about the possible adverse environmental and social impact that a project may have. Any concerns or grievances will be addressed quickly and transparently, and without retribution to the project affected or community members or complainant.

The primary principle of GRM is that all complaints or grievances are resolved as quickly as possible in a fair and transparent manner.

Objectives

The objectives of the GRM are to:

- Develop an organizational framework to address and resolve the grievances of individual(s) or community(s), fairly and equitably;
- Provide enhanced level of satisfaction to the aggrieved;
- Provide easy accessibility to the aggrieved/affected individual or community for immediate grievance redress;
- Ensure that the targeted communities and individuals are treated fairly at all times;
- Identify systemic flaws in the operational functions of the project and suggest corrective measures; and
- Ensure sustainability of the project.

Type of Complaints

The major complaints that may arise during the execution of the proposed project at site include but not limited to:

- E&S issues (dust, noise, air pollution, social and cultural issues);
- Damage and blockage of public utilities;
- Traffic inconvenience;
- Gender based violence (GBV) and harassment;
- Resettlement issues including loss of livelihood; and
- Issues related to compensation of resettlement impacts.
- Disclosure of GRM

The GRM will be disclosed at PIU-KWSSIP, KWSC head office, and concerned project engineers, KWSSIP website as well as at sub-project sites.

Structure of Grievance Redress Mechanism

The project will establish a three-tier GRM comprising Community GRC, sub-project GRC; and PIU-GRC.

Community GRC (Tier-1)

The community-GRC will provide a platform for project affected or community members to raise and discuss their concerns, resolve the E&S including resettlement issues at the community level and coordinate with project management to communicate these issues and concerns. Community-GRC will be established to maintain a close rapport and coordination with affected persons and community members throughout the project implementation. The social development specialist (SDS) of PIU with the assistance of SC will facilitate the establishment of community-GRC that is representative of the ethno-cultural and gender diversity within the community. The community-GRC will comprise the following six members with one as the committee convener:

- Three female members (from the project affected or community members); and
- Three male members (from project affected or community members).

The project E&S and engineering staff will coordinate with community-GRC to review and resolve the issue or concern related to resettlement planning or implementation as well as environmental and social concerns preferably within five (05) working days from receipt of the grievance. Any complaints that cannot be resolved at community-GRC will be forwarded to the next tier.

Sub-Project GRC (Tier-2)

KWSSIP will constitute a GRC headed by concerned Project Manager (PM) at each project site (including Priority Water Network Rehabilitation and Extension Project) to resolve all grievances and complaints of the project affected or community members received either directly or through the Tier-1. Sub-project GRC will comprise of the following members:

- Project Manager (PM), as head/convener of sub-project GRC;
- Environment, SDS and Gender specialists of PIU;
- E&S specialists of Supervision Consultant (SC)
- Resident Engineer of supervision consultant;
- A representative (E&S specialist) of contractor (if required); and
- A representative of local community.

Note: Representative from any other district government department may be called as and when required by the sub-project GRC. Environmental Specialists of PIU and SC will join sub-project GRC meeting related to environmental issues only.

Sub-project GRC will meet once a month and when the need arises. The sub-project GRC will review grievances involving all E&S issues including resettlement issues that may arise due to project implementation. Sub-project GRC will perform the following functions:

- Record, categorize and prioritize the grievances that need to be resolved by the committee and resolve them within ten (10) working days;
- Invite and hear aggrieved persons/parties to produce evidence of their claims and record their view point;
- Communicate its decisions and recommendations on all resolved issues to PIU and the aggrieved persons for smooth implementation;
- Forward the unresolved cases/ complaints to PIU-GRC within an appropriate time frame with reasons recorded and its recommendations;
- Develop an information dissemination system and acknowledge the aggrieved persons/parties about the development regarding their grievance;
- Maintain a complaint register accessible to the project affectees or community members with brief information about complaints and sub-project GRC decision with status report; and,
- Maintain complete record of all complaints received by the sub-project GRC with actions taken.

Any complaint that cannot be resolved by the sub-project GRC, will be forwarded to the next tier – the PIU-GRC.

PIU-GRC (Tier-3)

At the third tier, the PIU has already constituted a GRC (PIU-GRC). The PIU GRC will receive complaints either directly or through the Tier-2 GRC. The committee has the following composition:

- Project Director KWSSIP, (Chairman of PIU-GRC);
- SDS, Member
- Gender Specialist, Member;
- Concerned Project Manager – PIU, Member;
- SDS of SC, Member; and
- Representative of Civil Society.

Note: Representative from any other district government department may be called as and when required by the PIU-GRC. Environmental Specialists of PIU and SC will join PIU-GRC meeting related to environmental issues only.

The PIU-GRC, through authorized representative, will acknowledge the complainant about his/her complaint, scrutinize the record, investigate the remedies available and request the complainant to produce any record in favor of his/her claim. After thorough review and scrutiny of the available record on the complaint, a field visit will be conducted to collect additional information, if required. Once the investigations are completed, the PIU-GRC will give a decision within twenty (20) working days of receipt of the complaint. If the complainant is still dissatisfied with the decision, he/she can go to the court of law, if he/she wishes to.

Organization of the GRC is shown in **Figure A7-1**.

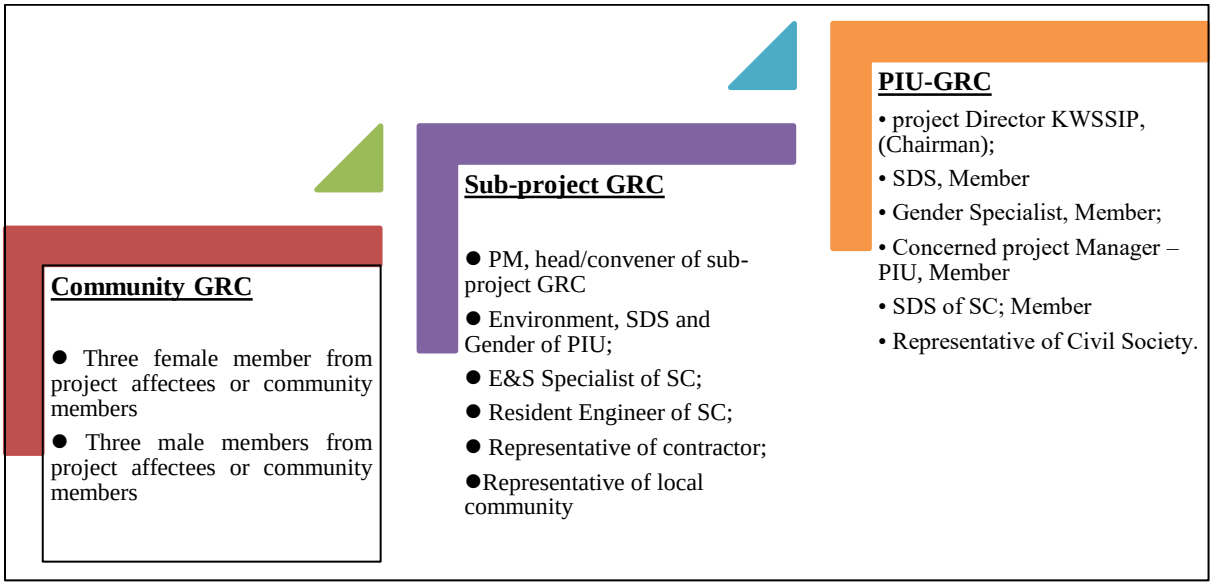


Figure A7-1: Organogram of GRC

Gender representation will be ensured by inducting a female member in all GRCs. The mechanism will ensure the access of project affected or community members to a GRM that openly and transparently deals with the grievances and makes decisions in consultation with all concerned that are consistent with the WB ESF requirements.

Gender Based Violence (GBV) Committee

Besides PIU-GRC, a GBV committee has also been established and notified within PIU consisting of the following members:

- Concerned Project Manager, Head/ Convener of GBV Committee;
- Gender Expert, KWSSIP, Secretary; and
- SDS KWSSIP, Member.

GBV Committee will address the gender related issues caused by the project activities during RP and project implementation.

Grievance Redress Procedure/ Mechanism

The intention of GRM is to resolve a complaint as quickly and at as low a level as possible to avoid a minor issue becoming a significant grievance. Irrespective of the stage of the process, a complainant has the option to pursue the grievance through the court as is his/her legal right in accordance with law.

The GRCs will work at site, sub-project and PIU levels. The E&S and engineering staff of PIU, in coordination with site staff will inform the project affected and community members about the GRCs and its mechanism through consultations and by posting at prominent places. The complaints received through any media will be screened by type and category. These complaints will be registered in the Community Complaints Register (CCR), where the name and address of the complainant, date, description of complaint and action taken will be recorded. The following procedure will be used to redress the grievances:

- First, complaint resolution will be attempted to be addressed at community-GRC through the involvement of the field E&S/engineering staff. The community-GRC will give a decision within five working days of receipt of the complaint. If unsettled, grievance can be lodged to the sub-project GRC by the complainant or by the GRC;
- Sub-project GRC will acknowledge receipt within two working days of lodging of complaint. Initial review and consultation with the sub-project GRC will be conducted within five working days of receipt of complaint. If required, sub-project GRC will advise the E&S/engineering specialists to conduct field visits in consultation with the aggrieved persons/parties and local community and submit a fact-finding report. Preferably, the fact finding will be completed within eight working days from receipt of complaints. sub-project GRC will give a decision within 10 working days of receipt of the complaint. If unresolved, a grievance will be lodged to the (PIU-GRC) by the complainant or by the GRC; and
- The PIU-GRC will give a decision within 20 working days of receipt of the complaint. If the complainant is still not satisfied, he/she can pursue further by submitting the case to the appropriate court of law.

All E&S issues will be dealt with according to the above GRM procedures. The GRCs will hear and clarify with the complainant (if required so) about the E&S issue and will conclude and communicate their recommendations for further implementation in due course of time. Complainant will be kept informed during the process and the GRC decision will be communicated to him/her accordingly. In case of any delay, the complainant will be informed on the progress and process about his/her grievance. The GRC proceedings will be documented step by step and all records will be maintained and summarized in the project progress and internal monitoring reports.

Lodging of Complaint

The complainant(s) can lodge their grievances through a number of ways/channels including online mail, phone, WhatsApp, e-mail and complaint box. Moreover, PIU has established an e-Portal for filing and tracking progress of the application online; the details are provided below.

- It is an electronic complaint lodging system (application) that will be accessible through a link on the PIU KWSSIP website;
- The focus of the e-portal is the quick complaint lodging for all types of primary stakeholders;
- Any project affected or community member with internet access can lodge a complaint with option for anonymous complaints. Uploading of photos for better understanding of the problem will also be an option;
- Each complainant will get a unique Grievance Number to track their complaints through the e-portal;
- Each complaint will go through a quick resolution mechanism being managed by a dedicated team at the PIU. Each complainant will be contacted to ensure that his/her issue is resolved;
- The portal will differentiate between types of complaints for targeted decision-making and action on behalf of PIU; and
- The portal will allow a quick and easy method for monitoring of the entire complaint lodging and resolution mechanism.

Annexure - 8: Information Disclosure, Consultation and Participation

Overview

Public consultation and information disclosure is an essential component of the EA process, recognized by development agencies and national governments alike. It is an inclusive process conducted throughout the project life cycle and most effective when initiated at an early stage of the project development process. For effective stakeholders' engagement at KWSSIP-2, Stakeholder Engagement Plan (SEP) has been prepared in line with the ESS-10: Stakeholder Engagement and Information Disclosure. This SEP has been followed at the project for the identification of relevant stakeholders, public consultation and information disclosure.

Stakeholders Identification and Analysis

In line with the SEP, the three categories of stakeholders for the project are outlined below:

- **Primary Stakeholders - Affected Parties** – persons, groups and other entities within the project area of Influence (AoI)[23] that are directly influenced (actually or potentially) by the project and/or have been identified as most susceptible to change associated with the project, and who need to be closely engaged in identifying impacts and their significance, as well as in decision-making on mitigation and management measures;
- **Primary Stakeholders - Vulnerable Groups** – persons who may be disproportionately impacted or further disadvantaged by the project(s) as compared with any other groups due to their vulnerable status[24,] and that may require special engagement efforts to ensure their equal representation in the consultation and decision-making process associated with the project; and,
- **Other Interested Parties** – individuals/groups/entities that may not experience direct impacts from the project but who consider or perceive their interests as being affected by the project and/or who could affect the project and the process of its implementation in some way;

Stakeholder identification and consultation were done as per the SEP of KWSSIP-2.

Primary Stakeholders – Project Affected Parties and Vulnerable Groups

Project Affected Parties include the project owner (KWSC, PIU of KWSSIP), 34 PAPs and communities in the AoI that will be the direct beneficiaries of the project as well as those that could be affected by environmental and social impacts such as social and cultural issues, noise, dust and increased vehicular traffic etc.

The vulnerable or disadvantaged groups relevant to the project include; women, elderly citizens; , disabled citizens; minorities (ethnic, religious, women); low-income households; women/child headed households; and transgender persons.

23 This refers to the overall project area which may have direct or indirect impacts due to project activities in these locations.
24 Vulnerable status may stem from an individual's or group's race, national, ethnic or social origin, color, gender, language, religion, political or other opinion, property, age, culture, literacy, sickness, physical or mental disability, poverty or economic disadvantage, and dependence on unique natural resources.

Secondary Stakeholders - Other Interested Parties

Interested parties under this category includes the following:

- SEPA;
- SSWMB;
- Revenue Department;
- KMC and DMCs;
- Local Councils;
- Civil Society Organizations (CSO) and Community Based Organizations (CBO);
- Academia and Subject Specialists;
- Labor and Human Resource;
- Social Welfare Department;
- Women Development Department;
- Donor Agencies; and
- Press and Media.

Details regarding roles and responsibilities of the concerned secondary stakeholders are given in **Table A8-1**.

Table A8-1: Role and Responsibilities of Project's Secondary Stakeholders

Project Stakeholders	Roles and Responsibilities
Sindh Solid Waste Management Board (SSWMB)	◆ The Board will regulate control or inspect the source points of generation, accumulation, transfer, recycling, trading of solid waste. ◆ The Board will have the right to the solid waste related issues, assets, funds and liabilities of the Councils and will possess sole rights on all kinds of solid waste within the limits of all Councils. ◆ The Board may support, promote, administer, execute and implement schemes for undertaking any commercial or business enterprise which may benefit the management of waste.
Sindh Environmental Protection Agency	◆ SEPA is the regulatory authorities and mainly responsible for the development and implementation of the environmental policies and strategies in order to integrate the environmental issues and sustainable development approaches into the legal and regulatory frameworks as per Sindh Environmental Protection Act, 2014. ◆ EPAs are responsible for the issuance of NOC of the Proposed project. ◆ EPA Sindh is responsible for the compliance of ESMP and NOC provision during the construction and operation stages of the project.
Revenue Department	◆ Provide and verify land ownership data which include but not limited to the ownership record, land categorization and price details.
KMC and DMC	◆ Planning development and maintenance of Karachi roads, bridges, streetlights, storm water drains, land control/ removal of encroachment, solid waste management, municipal watch and ward, firefighting, traffic engineering, charged parking, etc.
Political Parties	◆ The political parties working to resolve the problems faced by Karachi take up the issues of water and sanitation at different forums.

Project Stakeholders	Roles and Responsibilities
	◆ The city mayor, to be elected by the citizenry through the local bodies elections, will likely be from a political party. The working of KWSC and KWSSIP falls under the mandate of the mayor.
Local Councillors	◆ Elected and represent union committee constituents. Key link between constituents and city legislature and executive.
Civil Society Groups (CSG) and (CBOs)	◆ Largely policy and advocacy with limited interaction with government except in areas where strong CBO culture exists. ◆ CSOs in Karachi involved in development activism and service delivery. ◆ Identification of project-related environmental and social issues ◆ Identification of mitigation measures and solutions to ensure community issues, including those of vulnerable / disadvantaged groups are adequately addressed ◆ Identification of positive win-win solutions for environmental and social sustainability of the project
Cantonment Boards	◆ Six cantonment boards in Karachi with Clifton being the largest and Karachi Cantonment Board the smallest. Manage public services, environmental development and land use in their jurisdictions. Self-sufficient and managed directly by Core Commander and Ministry of Defence.
Academia and Subject Specialists	◆ Identification of project-related environmental and social issues and concerns ◆ Identification of positive solutions for environmental and social sustainability of the project that are technically sound and cost-effective
Labor and Human Resource	◆ Enforcement of labor laws ◆ Promotion of healthy labor management and conditions ◆ Monitoring of labor working conditions ◆ Implementation of labor standards ◆ Address grievances of labor force ◆ Maintain the minimum wages rates and impose restriction of child labor
Social Welfare Department	◆ Social protection including institutional care, skill development and rehabilitation ◆ Provide welfare services
Women Development Department	◆ Cover all the needful grounds regarding women without the discrimination of class, creed, religion, economic position. ◆ Address concerns of women related to the project ◆ Create employment opportunities ◆ Training and capacity building of women
Communities and project Affected Persons	◆ Participation in social impact assessment surveys, Consultation, and Focus Group Discussions ◆ Identification of project impacts, specific community concerns/suggestions from community leaders, male and female community members ◆ Identification of mitigation measures and solutions for enabling win-win solutions ◆ Supervision and disbursement of resettlement cost to APs.
Vulnerable / Disadvantaged Groups	◆ Identification of project impacts on vulnerable / disadvantaged groups ◆ Identification of mitigation measures and solutions to ensure vulnerable / disadvantaged groups are not adversely affected
Beneficiaries of the project	◆ Identification of issues. suggestion and coordination for improvement of the project design ◆ Support for implementation and aftercare of the project ◆ Identification of project-related environmental and social issues and concerns ◆ Identification of positive solutions for environmental and social sustainability of the project that are technically sound and cost-effective ◆ Aftercare of the project

Project Stakeholders	Roles and Responsibilities
Donor Agencies	◆ Compliance with Environmental and Social Safeguards of Unilateral and Multi-Lateral Development Agencies ◆ Lessons from previous/on-going development projects in the project-affected districts

Disadvantaged / Vulnerable Individuals or Groups

It is particularly important to understand whether project impacts may disproportionately fall on disadvantaged or vulnerable individuals or groups, who often do not have a voice to express their concerns or understand the impact of a project. It would also be critical to ensure that awareness raising and stakeholder engagement with disadvantaged or vulnerable individuals or groups be adapted to take into account particular sensitivities, concerns and cultural sensitivities of such individuals or groups and to ensure a full understanding of project activities and benefits. The vulnerability may stem from person's origin, gender, age, health condition, literacy levels, economic deficiency and financial insecurity, disadvantaged status in the community (e.g., religious and ethnic minorities or fringe groups), dependence on other individuals or natural resources, especially those living in remote, and insecure or inaccessible areas. Engagement with the vulnerable groups and individuals often requires the application of specific measures and assistance aimed at the facilitation of their participation in the project-related decision making so that their awareness of and input to the overall process are commensurate to those of the other stakeholders. In this project, the vulnerable or disadvantaged groups include:

- Women working in the water and sanitation sector in the city;
- Elderly employees and citizens;
- Disabled employees and citizens;
- Minorities (ethnic, religious, women);
- Low-income households;
- Women/child headed households; and
- Transgender persons.

Vulnerable groups within the communities affected by the project will be further confirmed and consulted through dedicated means, throughout the stakeholder's engagement process as appropriate.

Consultation Participation Process

The project intends to utilize various methods of engagement that were used as part of its continuous interaction with project stakeholders. For the engagement process to be effective and meaningful, a range of various techniques applied that were specifically tailored to the identified stakeholder groups in line with the SEP. For ascertaining the perceptions of different stakeholders about the project consultations/ meetings were carried out at following two levels:

- Consultations with Secondary Stakeholders - Other Interested Parties
- Consultations with Primary Stakeholders – PAPs and Vulnerable / Disadvantage Group

Consultations with Secondary Stakeholders - Other Interested Parties

Other Interested Parties - Secondary stakeholders identified, in the form of departmental stakeholders such as non-governmental organizations, government departments, and utility departments, were not only approached separately for the project's consultations, but also invited for a stakeholder consultation session, arranged to allow for all these departments to gather, and facilitate a meaningful dialogue on the project, and obtain their feedback on the project.

All relevant Government Departments/Organizations were invited in the consultation session where they were informed of the project in detail and requested to share their concerns and suggestions. Local representatives of all other stakeholder groups were also invited to the consultation session to encourage a collaborative and inclusive approach which includes the stakeholders from the civil society sector, academia and media representatives.

Consultations with Primary Stakeholders - Project Affected Parties

Affected Parties include local communities, community members and other parties that were subject to direct impacts from the project. The public consultations have been arranged through the Participatory Appraisal (PA) method. Participation mechanism and consultative process included: Information sharing, dissemination of information regarding impacts of the projects on social life and people in the project AoI, benefits of the project and participation of stakeholders in the project related activities, where their feedback were ultimately being incorporated back into the project design to the extent deemed possible.

For the public consultations, following steps were adopted:

a) Consultations with Beneficiaries

Consultations were conducted with beneficiaries of the project and will continue during the ongoing project stages and the project implementation to achieve the desired objectives. Public consultations are organized at different locations in the project area along the route.

b) Consultations with Project Affected Parties

Local level engagement was provided to all PAPs likely to be affected during the ESA process to align with international standards and good practice. Apart from those potentially affected communities and their representatives, the vulnerable and disadvantaged people within these communities (people who would not normally be involved in decision-making) were also engaged.

The main purpose of the consultation exercise was to disseminate project information to relevant stakeholders and solicit their feedback received at an early stage regarding potential issues and concerns based on the current project concept and design features. Identification of stakeholders is one of the major steps for designing an effective consultation process. For this purpose, several site visits were carried out by the E&S team to identify the relevant stakeholders for consultation.

Consultation meetings were conducted with the identified stakeholders. The stakeholders were briefed about the background and scope of the project at the beginning of the meeting sessions. Concerns and suggestions of the respondents were noted down by the team and pictures of the session were taken

with the consent of the stakeholders. If the interviewees had any queries regarding the project, the team responded to their queries during the session.

c) Methods of Public Consultation

The following methods were used for public consultation with project stakeholders to ascertain their stakes regarding project implementation. The views of the beneficiaries were formally recorded. The locations selected randomly situated near the proposed route of the road.

- Formal Group Meetings
- Informal Group Meetings
- Individual meetings
- Focused Group Discussions (FGDs)
- Gender Consultations

d) Categories of Stakeholders Contacted

Different categories of stakeholders which include but not limited to the residents, farmers, business/ shop owners, government and private servants, drivers, labor and women were contacted during consultations.

Community Consultation

Consultations mainly in the form of “Focus Group Discussions” (FGD) with Primary Stakeholders in selected Katchi Abadis were carried out, majorly at public places. It was important to provide meaningful input for the public into the decision-making process through consultation. It was helpful to create a strong foundation for long-lasting and trustful relationships between the project and the stakeholders. It was helpful for the organizations to enhance risk management and have better project outcomes. Local and traditional leaders, representatives of the communities, potential vulnerable groups such as women and youth has been consulted to understand their specific issues and concerns. This will enable meaningful participation. The findings and recommendations have been discussed and disclosed in an open and transparent manner with the communities in order to solicit their comments and suggestions in the studies.

A total of **181** respondents have been consulted for establishing socio-economic baseline, out of them, **108** were males and **73** were females. In some areas such as Mujahid and Future Colonies, women consultations were not allowed. **Table A8-2** provided the list of consulted communities

Table A8-2: Consulted Communities

No	Katchi Abadi Name	District	Population	Average Households	Sample size
1.	Zia Colony	Korangi	15,078	1,077	14
2.	Quaid-e-Azam Colony	East B	21,590	1,028	21
3.	Ali Mohammad Goth	Central A	17,953	816	22
4.	Mohammadi Colony D/D1	Korangi	16,912	939	18
5.	Mujahid Colony	Central B	25,592	2,132	12
6.	Future Colony	Malir	106,574	9,688	11
7.	Sherpao Colony	Malir	336,218	18,678	18
8.	Sharif Colony	Korangi	111,096	5,847	19

No	Katchi Abadi Name	District	Population	Average Households	Sample size
9.	Muslimabad	Malir	240,389	10,016	24
10	Bilalabad	Central	21,697	986	22

The complete settlement lists of participants are provided in **Table A8-3** and social baseline photographs provided in **Figure A8-1.**

Table A8-3: Katchi Abadi Summary of Consultation Meetings Outcomes

Stakeholder	Summary of Key Issues Raised	Responses
Zia Colony	Local people should be preferred when hiring	The contractor will be contractually bound to disclose the "Recruitment Policy" and follow it. They will be asked to hire at least 60 per cent people who live within close proximity to the Project Area
	What are the Project activities that could affect the environment and people?	The possible environmental impact of the project will be as following: ◆ Social impacts associated with: ◆ Employment generation (positive) ◆ Workers' well-being (positive) ◆ Community health, safety and well-being after project completion (positive)
Mohammadi Colony	The community desire to receive regular updates on the project development from the relevant government departments.	Definitely, the consultation process will be on-going process and World Bank's disclosure policy will be adopted. The EPC contractor will maintain an awareness campaign as part of SEP
	Water is scarce and communities have to buy water for drinking and other uses.	Water scarcity is a current problem in Karachi and water has to be purchased at exorbitant prices. Water scarcity will be addressed through the implementation of KWSSIP. GOS's is considering further treatment (tertiary) to reuse the treated water from TP-IV. Other schemes are also being planned by GoS to provide clean water.
	Some participants expressed that the relevant Government departments must ensure that their staffs is cooperative with the general public and maintain the right attitude and try to facilitate them instead of being confrontational during project activities.	During the project implementation stage, measures will be included in the GRM and institutional arrangements to ensure that the project management staffs remains accessible and facilitative to the community
	The local representatives of the community requested to raise awareness of pollution, industrial waste, and how to mitigate them.	The EPC contractor will carry out an awareness campaign as part of SEP
Ali Mohammad Goth	There is a need to help communities understand, participate in all activities related to this project and also there is a need to work to increase civic engagement in addressing their concerns and facilitate collaboration among local and regional entities to address their problems.	During the project implementation stage, measures will be included in the GRM and institutional arrangements to ensure that the project management staffs remains accessible and facilitative to the community The EPC contractor will carry out an awareness campaign as part of SEP
	How was the Project assessed?	The project implementation will create employment for local un skilled and semi-

Stakeholder	Summary of Key Issues Raised	Responses
		skilled labour. Contractor will be contractually bound to disclose the "Recruitment Policy" and follow it. They will be asked to hire at least 60 per cent people who live within close proximity to the Project Area. Project will create a positive impact on then health facilities of the community. Drainage improvement will create positive environmental facilities in the area.
	The communities of the project area requested that consultant may identify issues and opportunities, and best management practices for pollution and industrial waste control.	During the project implementation stage, measures will be included in the GRM and institutional arrangements to ensure that the project management staffs remains accessible and facilitative to the community The EPC contractor will carry out an awareness campaign as part of SEP
Sharif Colony	Some participants expressed that the relevant Government departments must ensure that their staffs is cooperative with the general public and maintain the right attitude and try to facilitate them instead of being confrontational during project activities.	During the project implementation stage, measures will be included in the GRM and institutional arrangements to ensure that the project management staffs remains accessible and facilitative to the community
	Concern about the deteriorated water quality due to industrial waste that could impact drinking water and reduced capacity in wells.	This project by providing conveyance of sewerage water in closed HDPE pipes for treatment will improve water quality as mixing of water with sewerage water will be reduced or cease altogether. Regarding industrial waste concerns it should be noted that GoS is working on treatment plant for industrial waste (CETP).
	We are really appreciative of this project; however what job opportunities will there be for young people?	**Chapter** 0 covers Social and Socioeconomic Aspects baseline and **Chapter 5** impacts and mitigation has identified that there will be some beneficial impacts through the creation of employment during construction and operation.
Future Colony	The community members requested that concerned authorities should enhance the quality of health and education facilities in the project area.	The Contractor may consider to take this up as part of their commitment for the well-being of the environment and society and come up with solutions or alternatives.
	Availability of safe drinking water is big challenge for the project communities and they want to request the concerned authorities to provide safe drinking water.	This project will improve water quality via conveyance of sewerage water to treatment plant via closed HDPE pipes. This will stop mixing of water with sewerage water. Whereas provision of safe water is not within the purview of this project, however supply of safe water is part of GOS other projects
	To ensure the project was beneficial for the concerned communities.	Comment has been incorporated in this table 9-6. Opportunities have been discussed in detail in **Chapter 5**

Stakeholder	Summary of Key Issues Raised	Responses
	Deficiency of health and education facilities, especially for women in the project area.	The project will have a direct impact in improving health within the project area, once intermingling of waste water with drinking water is reduced or eliminated.
Mujahid Colony	The communities of Mujahid colony have complained about dumping of tons of solid waste and its burning. This is a big hazard for the residents and it has caused fatalities especially amongst children.	Whereas existing issues related to solid waste dumping and burning is not within the purview of this project, however GoS's is working on this.
	This dumping site is become a big mountain and when it is being burned then it produces a big smoke which lead it problem in respiratory system and effects to eyes sight	Whereas health issues caused by existing solid waste dumping and burning is not within the purview of this project, however GOS's is working on this.
	Peoples do not have the dumping or sold waste collection facility, therefore, they use to it in the river side and it also cause to lead different diseases and mosquitoes which lead to malaria and diarrhoea	Whereas issues related to vector borne disease caused by existing solid waste dumping in the river bed is not within the purview of this project, however GoS's is working on this. The Contractor may consider to take this up as part of their commitment for the well-being of the environment and society and come up with solutions or alternatives
Quid-e-Azam Colony	The project communities do not have easy access to the health facilities specifically females, as it is difficult to travel to Jinnah hospital for medical services and other private hospitals are unaffordable	The Contractor may consider to take this up as part of their commitment for the well-being of the environment and society and come up with solutions or alternatives. This project will provide the water and sewerage facilities to the community. KWSC will raise the question with GoS regarding the health facility. Hope for the better environment for will be provided in future health
	The communities have also requested for the easily access to the educational facilities, because private schools charge unaffordable fee.	The Contractor may consider to take this up as part of their commitment for the well-being of the environment and society and come up with solutions or alternatives.
	People of area have also taken interest in the project as it has a positive side. Especially the covered waste water conveyance system which is safer for kids who play near the open drains causing many accidents.	GoS and WB are working on other projects which will address the issue regarding water supply. Furthermore once sewerage water is conveyed to treatment plant via closed HDPE pipe, mixing of this water with piped water will cease or be reduced thus improving water quality
Sherpao	People consider that this project will provide a positive outcome and are also hopeful that it may also provide safe drinking water to them	This project will improve water quality via conveyance of sewerage water to treatment plant via closed HDPE pipes. This will stop mixing of water with sewerage water. Whereas provision of safe water is not within the purview of this project, however supply of safe water is part of GoS other projects
	People complained about quality of water received via piped water supply. Almost all Karachi	Water scarcity is a current problem in Karachi and water has to be purchased at exorbitant prices. Water scarcity will be

Stakeholder	Summary of Key Issues Raised	Responses
	population is forced to buy either bottled mineral water or treated water from reverse osmosis (RO) plants, which are operating in every neighbourhood of Karachi	addressed through the implementation of KWSSIP. GOS's has planned with the coordination with WB to improve the water supply of Karachi through KWSC department.
Bilalabad	Will construction occur in the day time?	Construction works will be carried out during normal working hours of day. M ajority of construction activities will occur during the daytime, although there may be a need for some night-time activities. Noisy construction activities will be limited to daytime periods only.
	The poor people living in squatters have no affordability to buy mineral bottled water, RO plant water or even small vender supplied water. They consume whatever water is available, either piped water.	GoS and WB are working on other projects which will address the issue regarding water supply. Water scarcity will be addressed through the implementation of KWSSIP. GOS's has planned with the coordination with WB to improve the water supply of Karachi through KWSC department.
	People of Karachi are annoyed for receiving water via tankers instead of piped water and the common perception is that Karachiites are denied supply of piped water, as their basic human right, and this water is stolen and sold to them on exorbitant prices.	GoS and WB are working on other projects which will address the issue regarding water supply. Furthermore If the tertiary treatment plant comes into use then some of the communities' expectations may also be met from this source.
Muslimabad	Whether local labour resources will be used during construction and operation phases of the Project	The contractor is contractually bound to disclose the "Recruitment Policy" and implement it. Most of the unskilled and semi-skilled works force will be from the construction project area
	The local community members in the project area mentioned that it must be ensured through efficient implementation of the proposed interventions that they will receive unpolluted water for their domestic and agriculture use.	Efficient implementation of the project is expected. GoS is working on various schemes to provide unpolluted water to Karachi. KWSSIP with the coordination of GOS's and WB finance has planned to provide facilitate the citizen with improve water supply of Karachi through KWSC department.
	The decreasing supply of fresh water is hazards for local communities	GoS is working on various schemes to provide unpolluted water to Karachi.

Female Participants

Participants List of Zia Colony		
No.	**Name**	**Settlement**
1.	Tamseela	Zia Colony
2.	Irshad Bibi	
3.	Sajida	
4.	Noreen	

Participants List of Quid e Azam Colony		
No.	Name	Settlement
1.	Nazia	Quid e Azam Colony
2.	Sadaf	
3.	Amna	
4.	Ghazala	
5.	Sonia	
6.	Jamila	
7.	Bilquees	
8.	Rukhsana	
9.	Muhammad Ali	
10.	Ismail	
11.	Mrs Mosa	

Participants List of Ali Mohammad Goth		
No.	Name	Settlement
1.	Shameem	Ali Mohammad Goth
2.	Zubedha	
3.	Amna	
4.	Suraiya	
5.	Salma	
6.	Sabira	
7.	Rani	
8.	Afshan	
9.	Sughra	
10.	Mukhtiyar	
11.	Shaheen	

Participants List of Muhammadi Colony		
No.	Name	Settlement
1.	Nosheen	Muhammadi Colony
2.	Shabana	
3.	Nargis	
4.	Firdous	
5.	Sardara bibi	
6.	Shabana	
7.	Shagufta	
8.	Kiran	
9.	Kuasar	

Participants List of Sharif Colony		
No.	Name	Settlement
1.	Rehana	Sharif Colony
2.	Mrs Zahid Ali	
3.	Mrs Shahzad	
4.	Mrs Umair	
5.	Mrs Nasir	
6.	Mrs Javed	
7.	Sultana	
8.	Mrs Shoukat	
9.	Mrs Yameen	

Participants List of Sherpao Colony		
No.	Name	Settlement
1.	Enam Fatima	Sherpao Colony
2.	Javeria Ali	
3.	Tanzeela	

Participants List of Sherpao Colony		
No.	Name	Settlement
4.	Ayesha	
5.	Iqra Ahmed	
6.	Isra	
7.	Sahar Najaf	
8.	Nisha Naz	

Participants List of Muslimabad Colony		
No.	Name	Settlement
1.	Umme Habiba	Muslimabad Colony
2.	Asia	
3.	Rehana	
4.	Sobia	
5.	Fozia	
6.	Bismina	
7.	Lubna	
8.	Shabana	
9.	Najma	
10.	Fahmida	
11.	Nusrat	
12.	Brahima	

Participants List of Bilalabad Colony		
No.	Name	Settlement
1.	Shameen	Bilalabad Colony
2.	Perveen	
3.	Sakeena	
4.	Saima	
5.	Seema	
6.	Yasmeen	
7.	Asyia	
8.	Bukhtawar	
9.	Aneesa	

Male Participants

Participants List of Zia Colony		
No.	Name	Settlement
1.	Khalid Hussain	Zia Colony
2.	Vicky	
3.	Irshad Maseeh	
4.	Sher Khan	
5.	Mustafa	
6.	Kashif	
7.	Sheeraz	
8.	William Lathi	
9.	Muhammad irfan	
10.	Gulzar Massih	

Participants List of Quid e Azam Colony		
No.	Name	Settlement
1.	Rashid	Quid e Azam Colony
2.	Najib	
3.	Abdul Fattah	
4.	Abdullah	
5.	Muhammad Jawed	
6.	Ahmed	
7.	Nazeer Hussain	

Participants List of Quid e Azam Colony		
No.	Name	Settlement
8.	Samiullah	
9.	Madad Khan	
10.	Rahmatullah	

Participants List of Ali Mohammad Goth		
No.	Name	Settlement
1.	M.Jabbar	Ali Mohammad Goth
2.	M.Arif	
3.	Shahrukh	
4.	Ramzan	
5.	M.Irshad	
6.	M.Usman	
7.	Preme Sharma	
8.	M.Suhail	
9.	Abdul Sattar	
10.	Abdul Majid	
11.	M.Suhail	

Participants List of Muhammadi Colony		
No.	Name	Settlement
1.	Abid	Muhammadi Colony
2.	Javed	
3.	M.zaheer	
4.	Feroz	
5.	Rashid	
6.	M.Owais	
7.	M.moeen	
8.	M.Aijaz	
9.	M.Ali	

Participants List of Sharif Colony		
No.	Name	Settlement
1.	Mukhtiyar Ali	Sharif Colony
2.	Muhammad Adil	
3.	Kashif Mughal	
4.	Mudasir	
5.	Mubasher	
6.	Sany	
7.	Abdullah	
8.	Afaq Ahmed	
9.	Shams ud Din	
10.	Muhammad Mubeen	

Participants List of Mujahid Colony		
No.	Name	Settlement
1.	M.Yaseen	Mujahid Colony
2.	M.Haneef	
3.	Noman	
4.	M.Baber	
5.	Uzair	
6.	M.Rafiq	
7.	M.Nadeem	
8.	Meer Hassan	
9.	M.Yousuf	
10.	M.Rizwan	

Participants List of Mujahid Colony		
No.	Name	Settlement
11	M.Jameel	
12.	M.Yaqoob	

Participants List of Future Colony		
S. No.	Name	Settlement
1.	Adil	Future Colony
2.	Usama	
3.	Sherzada	
4.	Iqbal Muhammad Khan	
5.	Akhtar	
6.	Shahmeer	
7.	Jan Alam	
8.	Abdul Razzak	
9.	Malik Nadeem	
10.	Nosher Awan	
11	Ahmed Khan	

Participants List of Sherpao Colony		
S. No.	Name	Settlement
1.	Masood Akhtar	Sherpao Colony
2.	Najaf Khan	
3.	Nisaar Ahmed	
4.	Muhammad Saeed	
5.	Ali Raza	
6.	Arshad Khan	
7.	Sher Ali	
8.	Abdul- Rehman	
9.	Muhammad Tahir Khan	
10.	Afzaal Ahmed	

Participants List of Muslimabad Colony		
S. No.	Name	Settlement
1.	Aitbar Khan Gujjar	Muslimabad Colony
2.	Badar	
3.	Jahanzeb	
4.	Noor Rehman	
5.	Wazeer Khan	
6.	Hazrat Ali Gujjar	
7.	Habeeb ur Rehman	
8.	Sahib Zada	
9.	Ejaz Khan	
10.	Ajab Khan	
11.	Orangzeb	
12.	Siraj Mohammad	

Participants List of Bilalabad Colony		
S. No.	Name	Settlement
1.	Akbar Saeed Khan	Bilalabad Colony
2.	Fazal Haq	
3.	Mujahid	
4.	Noor Ahmed	
5.	M. Shahzad	
6.	M.Shafiq	
7.	M. Nasir	
8.	Habib Ullah	

Participants List of Bilalabad Colony		
S. No.	Name	Settlement
9.	Shah Khalid	
10.	Muhammad Ali	
11.	Waheed Ahmed	
12.	Dawood Khan	
13.	Shahzad Khan	

Figure A8-1: Social Baseline Photographs

Public Consultation (Female)

Zia Colony

Mohammadi Colony

Sharif Colony

Quaid-e-Azam Colony

Sherpao Colony

Bilalabad Colony

Muslimabad Colony

Public Consultation (Male)

Zia Colony

Muhammadi Colony

Ali Mohammad Goth

Sharif Colony

Future Colony

Mujahid Colony

Quaid e Azam Colony

Sherpao Colony

Bilalabad Colony

Muslimabad Colony

Feedback and Concerns from the Communities

During the socio-economic field survey of 10 Katchi Abadi, the participants were first briefed about the project objectives and major interventions associated with the project implementation. Afterward, people were asked to express their views regarding various activities of the proposed project. In general participants appreciated the project and offered comments & suggestions to enhance the expected environmental and social benefits and to mitigate the adverse impacts. The community perception of the project was very good but most of the people wish to enhance the availability of water through sustainable and safety manner. They also showed their apprehension about the shortage of water.

The digest of major issues raised by communities is provided as follows:

- Local people should be preferred when hiring.
- Community desires regular updates on project development from relevant government departments.
- Water is scarce, and communities have to buy water for drinking and other uses.
- There is a need to help communities understand and participate in all project activities and to increase civic engagement.
- The project was assessed to ensure it was beneficial to the concerned communities.
- Concerns were raised about deteriorating water quality due to industrial waste that could impact drinking water and reduce well capacity.
- The community requested job opportunities for young people and enhancements to health and education facilities in the project area.
- Availability of safe drinking water is a big challenge for the project communities.
- The communities complained about dumping solid waste and burning it, which causes health hazards.
- The project communities do not have easy access to health and education facilities, especially for women.
- People complained about the quality of water received via piped water supply in some Katchi Abadis and said they must buy bottled or treated water.

- The poor people living in squatters have no affordability to buy bottled water, treated water or even small vendor supplied water.
- Local labour resources should be used during construction and operation phases of the project.
- The local community members want to receive unpolluted water for domestic and agriculture use.
- The decreasing supply of fresh water is hazardous for local communities.

Women Consultation Outcomes

Female members of the communities were consulted during the ESMP study in the project area. Following issues have been observed:

- Conducting women consultations was challenging in areas like Mujahid colony and Future colony where male members did not allow consultation with female.
- A participatory and consultative approach was employed for information gathering and data collection.
- Women's main concerns were related to water shortage, electricity, shortage of health facilities, broken roads, non-availability of gas, and improper arrangements for disposal of sewage.

Consultations with Secondary Stakeholders - Other Interested Parties

The consultant environmental and social team visited various secondary stakeholders' offices for information disclosure and getting feedback. They were briefed on the ESA process, the proposed project, proposed interventions and the potential negative and positive impact of the project on the area's environment and concerned communities. It was important not to raise community expectations unnecessarily or unrealistically during the stakeholder consultation meetings in order to avoid undue conflict with local people or government administration. The issues recorded in the consultation process were examined and validated and are addressed in the ESMP report. The discussion with institutional stakeholders was mainly focused on following aspects:

- Baseline environmental and socio–economic conditions of the project area
- Expected impacts of project on natural and social environment
- Mitigation of adverse impacts associated with project

The public sector representatives of the different line departments expressed their complete support and efforts towards the project development and mentioned the intent to ensure the project was completed at the earliest to the highest quality standards. In addition, these officials expressed the commitment to ensuring the support and would adhere to all environmental and social compliance standards with no leniency in this regard to be expected from the relevant Government line departments.

The digest of comments and suggestions received by the departments are given in **Table A8-4**, whereas complete list of offices visited and officials consulted is provided in **Table A8-5**.

Table A8-4: Consultation with Institutional Stakeholders

No.	Department/ Organization	Name	Designation
1.	Sindh Environmental Protection Agency (SEPA)	Imran Sabir	Deputy Director
2.	District Municipal Corporation (DMC), Malir	Riaz Ahmed Khatri	Administrator
3.	TMO, Malir	Sohail Ahamed	Executive Engineer
4.	Health Department, Malir	Dr. Mohammad Khan	A.D.H.O
5.	DMC, East	Javed Soomro	Assistant District Commissioner
		Rehmatullah Sheikh	Administrator
6.	Health Department, East	Dr. Jamil Sheikh	D.H.O
		Dr. Jameel Mughal	A.D.H.O
7.	Education Department, Karachi Division	Abida Lodhi	Director
8.	Sir Syed Ahmed Khan University	Muhammad Ameen	Supervisor
9.	National Institute of Management	Syed Rafiq Hussain Shah	Director
10.	Sindh Infection Disease and Research Center	Dr. Adul Razzaq	A.M.S
11.	Public Health Engineering Department	Muhammad Bakhash	Research Officer
12.	Urban Resource Center (NGO)	Mohammad Younus	Director
13.	Chinoot Hospital (NGO)	Rizwan Ahmed	Administrator
14.	Agha Khan Institution (NGO)	Faheem Ahmed	Supervisor
15.	SOS Village (NGO)	Ghazala Farooqi	Assistant Director
16.	KWSC, Karachi	Shahzad Mashkoor	Assistant Executive Engineer
17.	Women Development Department	Hiba Khan	Project Coordinator
		Dr. Abdul Hafeez Sheikh	General Coordinator Project
18.	Sindh Employees Social Security Hospital	Dr. Farooq Ahamed	RMO

Table A8-5: Feedback and Concerns

Key Concern	Response/Action
The ESA study should thoroughly cover all the environmental and social aspects and the report should provide clear-cut guidelines on the mitigation of identified impacts associated with the project.	The ESMP will thoroughly cover all the environmental and social aspects and the report will be finalized / submitted to SEPA after careful review of the E&S experts associated with the project from PIU / WB and the ESA Consultants.
Jobs should be given to locals	The contractor will be made contractually bound to disclose the “Recruitment Policy” and follow it. They will be required to hire at least 60 percent people who live within close proximity to the Project Area.
The schools in the surrounding areas may be upgraded	The Contractor may consider taking this up as part of their commitment for the well-being of the environment and society and come up with solutions or alternatives.
The proposed project is the great initiative by the government.	Agreed
Hopefully the project will improve quality of life in Katchi Abadis	Agreed

Key Concern	Response/Action
Introduction of sewerage network will greatly improve health profile of Katchi Abadis	Agreed

Addressing Stakeholder Concerns

Most of the concerns raised by stakeholders have already been incorporated into the project's ESIA. In addition, a Grievances Redress Mechanism will be developed at the implementation level, which will receive and resolve complaints of the communities and other stakeholders of the project area.

Addressing Stakeholder Concerns

Most of the concerns raised by stakeholders have already been incorporated into the project's ESMP (Chapter 05, Chapter 06). In addition, a Grievances Redress Mechanism will be developed at the implementation level, which will receive and resolve complaints of the communities and other stakeholders of the project area.

Stakeholder Consultation Workshop

PIU - KWSSIP with the support ESA Consultants, have organized a Stakeholder Consultation Workshop on 28th July 2022 at Regent Plaza in relation to information disclosure and stakeholders' engagement in relation to the project. The main objective of the workshop was to get feedback of stakeholders at broader level. The stakeholders being invited include relevant Government Departments, NGOs, Academia, World Bank, Sindh Environmental Protection Agency (SEPA) and Local Community representatives. The stakeholders actively participated and provided precious comments, suggestions and shared their views based on their practical experience at different projects. The session has been completed with the conclusion that the project is a pressing need of time, and it should be built within the record time-frame. The stakeholder consultation list of the participants and photographs of Stakeholder Consultation Workshop is given in **Figure A8-2**.

Figure A8-2: Attendance Sheets of Stakeholder Consultation Workshop

KWSSIP

THE WORLD BANK AIIB

Stakeholder Consultation Workshop – Environmental & Social Assessment Studies

SOP 02 Projects for Karachi Water & Sewerage Services Improvement Project (KWSSIP)

28th July 2022

S. No.	Name	Designation / Department	Signature
1.	Muhammad Tariq	ASE	
2.	Bilal Zafar	KWSSIP	
3.	Sibtain Mughal	Joint Director Urban	
4.	Dr. Abdul Ghaffar	Env. Engg. Deptt. NED University	
5.	Mr. Shoaib Qureshi	Act Director SEPA	
6.	Ali Larosh	Sr. Project Officer WWF-Pakistan	
7.	Farooq Bhutto	K Electric	
8.	Yar Muhammad	Transport Deptt.	
9.	Huma Haleyoto	Safeguard Specialist	
10.	Zahid Farooq	Joint Director LARC KH	

1071PO1 I 01 (Stakeholder Consultation Workshop – Attendance List)

KWSSIP

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Stakeholder Consultation Workshop – Environmental & Social Assessment Studies

SOP 02 Projects for Karachi Water & Sewerage Services Improvement Project (KWSSIP)

28th July 2022

S. No.	Name	Designation / Department	Signature
11.	UZAIR HAMEED KHAN	MANAGER ROW OPS PTCL	
12.	Mushtaque Ahmed Soomro	Coordinator Protocol NRL.	
13.	CDR Rehan Sadiq.	Sr. Mgr Administration	
14.	KHALID M. SIDDIQUI	Member (Services) P&D Board GOS	
15.	SYED ALI NAUMAN	CHIEF ENGINEER, K-D.A.	28/07/2022
16.	Kamran Akbar	Sr. Social Div SP	
17.	SARFARAZ	KWSIP	
18.	Mazhar Ali Shaikh	Director Katchi Abadi KWSSIP	
19.	Bandar Rehan	WB	
20.	Engr: M. Usman Memon	S.E T/C (BoS). Pak: Steel.	

1071PO1 I 01 (Stakeholder Consultation Workshop – Attendance List)

KWSSIP

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Stakeholder Consultation Workshop – Environmental & Social Assessment Studies

SOP 02 Projects for Karachi Water & Sewerage Services Improvement Project (KWSSIP)

28th July 2022

S. No.	Name	Designation / Department	Signature
21.	KAMRAN UMAR	EE / KDA	
22.	Khurram Shah	SDS / KWSSIP	
23.	Syed Waqar Hussain	ES / KWSSIP	
24.	ARSLAN ASGHAR	PRINCIPAL ENVIRONMENTALIST - PK	
25.	Aqeel Ahmed Maggi	SA. Asstt. Engineer M.Co	
26.	Muhammad Saqib Siddiq	Sr. Social & Resettlement Spec.	
27.	Muhammad Nouman	Junior Engineer HDPDA K-4	
28.	Muhammad Yaqoob	Manager (LAND) PSP	
29.	Mazhar Abbas	Assistant Manager (PSM)	
30.	Intekhab A Rajput	Chief Engineer (P&M) KWSSIP	

1071PO1 I 01 (Stakeholder Consultation Workshop – Attendance List)

KWSSIP Karachi Water & Sewerage Services Improvement Project

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Stakeholder Consultation Workshop – Environmental & Social Assessment Studies

SOP 02 Projects for Karachi Water & Sewerage Services Improvement Project (KWSSIP)

28th July 2022

S. No.	Name	Designation / Department	Signature
31.	Tuba Noman	GIS Specialist	[signature]
32.	Muhammad Sajjad	Resettlement Expert NESPAK	[signature]
33.	M. A. Shishamahal	MMP	[signature]
34.	M. Shariq Ahmed	Nespak Lhr. (PM-CA)	[signature]
35.	Fahad Saleem	Nespak (Env. spec.)	[signature]
36.	OMAR ARIF	EMC Pakistan	[signature]
37.	Talal Ahmed	MMP	[signature]
38.	Rameez ul Aslam	MMP	[signature]
39.	GUL MIR KHAN	Chief Engr (T&C) KIV Board	[signature]
40.	Hajeeb-u-Rehman	Manager PTCL N/W Dev	[signature]

1071PO1 I 01 (Stakeholder Consultation Workshop – Attendance List)

MMP MM Pakistan (Pvt) Ltd NESPAK National Engineering Services Pakistan EMC

KWSSIP Karachi Water & Sewerage Services Improvement Project — THE WORLD BANK — AIIB

Stakeholder Consultation Workshop – Environmental & Social Assessment Studies

SOP 02 Projects for Karachi Water & Sewerage Services Improvement Project (KWSSIP)

28th July 2022

S. No.	Name	Designation / Department	Signature
41.	Dr. Aamir Alamgir	Assistant Professor / Institute of Environmental Studies, KU	[signature]
42.	Ghulam Kibria	Energy Update	[signature]
43.	Wg Cdr DARYA KHAN	OC Admin / PAF	D. Coor [signature]
44.	Muhammad Nawaz	SWEEP. Korangi Social safeguard Specialist	[signature]
45.	Zulfiqar laghari	Sr. Social Dome Com Specialist	[signature]
46.	Muhammad Zafar Iqbal	Resettlement MMP Specialist	Muhammad Zafar Iqbal
47.	muhammad Rahim Junejo	M.M.P.	M. Rahim
48.	A. Rehman	kwsb.	[signature]
49.	Nasreen Baloch	Assistant Director Social welfare Dept.	[signature]
50.	Jawed Shami	Team leader Envirocons	[signature]

1071PO1 I 01 (Stakeholder Consultation Workshop – Attendance List)

MMP MM Pakistan (Pvt) Ltd — NESPAK National Engineering Services Pakistan — EMC

KWSSIP

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Stakeholder Consultation Workshop – Environmental & Social Assessment Studies

SOP 02 Projects for Karachi Water & Sewerage Services Improvement Project (KWSSIP)

28th July 2022

S. No.	Name	Designation / Department	Signature
51.	Masood ur Rehman	Sr. Environmentalist-I	
52.	Nadeem Akhtar	Pakistan Refinery Sr Manager construct	
53.	Khurram Shehzad.	CE-Civil PIU	
54.	Asad Waqar	SE (Civil) PIU.	
55.	Syed Babar Ali	Social specialist Click consultant	
56.	Rehan Zahir	Survey Officer	
57.	Syed Waqas	Sub Eng.	
58.	Haneeda Kaleem	Gender Specialist	
59.	Ismail Zaidi	CMES	
60.	Mussawir Qureshi	PIU SWEEP	

Photograph of Stakeholder Consultation Workshop

The Welcome address given by Mr. Syed Salahuddin (Project Director)

Mr. Khurram Shams Khan and Syed Waqar Hussain Shah present the objectives of the workshop to the audience

Participants in Stakeholder Consultation meeting

Question from the stakeholder

Group photo after the successful completion of stakeholder meeting