ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN
"Rehabilitation of Existing Sewerage Line from Dawood Shoro Goth to Sukhan Nadi, District Council, Karachi"

Sub-project of District Council, Karachi

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List of Acronyms

AASHTO	:	American Association of State Highway and Transportation Officials
AED	:	Anti-encroachment Drive
ARAP	:	Abbreviated Resettlement Action Plan
BP	:	Bank Procedure
WB	:	World Bank
CESMP	:	Construction Environmental and Social Management Plan
CLICK	:	Competitive and Livable City of Karachi
DMCs	:	District Municipal Corporations
KMC	:	Karachi Metropolitan Corporation
LCs	:	Local Councils
EA	:	Environmental Assessment
EIA	:	Environmental Impact Assessment
IEE	:	Initial Environmental Examination
EC	:	Environmental Checklist
ESC	:	Environmental and Social Cell
ESMF		Environmental and Social Management Framework
ESMP	:	Environmental and Social Management Plan
ESO	:	Environment Safeguard Officer
ESR	:	Environmental and Social Screening Report
ESS	:	Environmental Social Screening
GDP	:	Gross Domestic Product
GoS	:	Government of Sindh
GRM	:	Grievance Redress Mechanism
NOC	:	No Objection Certificate
OP	:	Operational Policy
PAPs	:	Project Affected People
PDOs	:	Project's Development Objectives
PKR	:	Pakistani Rupee Rates
PPEs	:	Personal Protective Equipment's
PTCL	:	Pakistan Telecommunication Limited
RoW	:	Right of Way
SEPA	:	Sindh Environmental Protection Agency
SES	:	Socio Economic Survey
SSGC	:	Sui Southern Gas Company
SSO	:	Social Safeguard Officer
SEQS	:	Sindh Environmental Quality Standards
SSDWQ	:	Sindh Standards for Drinking Water Quality
CHS	:	Community Health and Safety
OHS	:	Occupational Health & Safety
SSWMB	:	Sindh Solid Waste Management Board
TORs	:	Terms of References
UIPT	:	Urban Immovable Property Tax
UC	:	Union Council
IMC	:	Independent Monitoring Consultant

Executive Summary

The Local Government Department (LGD), Government of Sindh (GoS) with the support of World Bank (WB) is implementing "Competitive and Livable City of Karachi" project (hereinafter referred to as CLICK). The World Bank is assisting Government of Sindh (GoS) on strengthening the institutional and financial capacity of the Karachi local councils (Karachi Metropolitan Corporation (KMC), Seven District Municipal Corporations (DMCs) and District Council Karachi) to deliver and maintain critical urban infrastructure and services through this programme. The overall programme has four components:

Component 1 – Performance-Based Grants to Local Governments and Capacity Building;
- **Sub-component 1.1:** Performance-based Grants to Local Councils; and
- **Sub-component 1.2:** Technical Assistance and performance grants implementation and management

Component 2 – Technical Assistance for reforming urban Property Tax administration and system indicative financing;
Component 3 – Improving City's Competitiveness and Business Environment; and
Component 4 – Technical Assistance for Solid Waste Management (indicative).

The District Council has identified and proposed a sub-project under CLICK namely: "Rehabilitation of Existing Sewerage line from Dawood Shoro Goth to Sukhan Nadi, District Council, Karachi". Under this sub-project, rehabilitation of a sewerage line from Mateen complex at Dawood Shoro Goth to the designated disposal point in the existing sewer manhole of 24 inch dia. sewerage line will be carried out under the "Minimum Condition" Grant of Component-1.

The main access road to Dawood Shoro Goth starting near Mateen Complex on National Highway, N-5, remains inundated with sewage due to choked and damaged sewerage lines and overflowing gutters at the Sub-project site. Therefore, the people living in the adjoining area suffer due to insanitary conditions and foul smells and are at the risk of spread of diseases in the neighborhood.

Considering the need for proper sewerage in this area, the District Council is planning to rehabilitate the sewerage line from Mateen complex (Dawood Shoro Goth) to designated disposal point (existing sewer manhole of 24 inch dia. sewerage line) via Shah Latif Town Sector19-B, UC-25, under this sub-project. The tentative cost of the sub-project is around: PKR. 56 million.

The World Bank, under the Environmental Safeguards requires Environmental Assessment and Social Impact (ESIA) of such proposed projects to ensure that they are environmentally and socially viable and sustainable as this Sub-project has triggered the Bank's policy OP 4.01 on Environmental Assessment. Therefore, an ESMP is required for the proposed sub-project.

The ESMP has fulfilled the requirements of National and Provincial applicable acts, regulations and operational policies. The proposed subproject is a "Category B" project under World Bank environmental and social screening guidelines and requires the development of a site-specific Environmental and Social Management Plan (ESMP). As the Sub-project is for the rehabilitation of existing sewerage line about 1.7km long located in rural area of Karachi, the Sub-project does not fall in any of the Schedules (Schedule I, Schedule II & Schedule III) of Sindh Environmental Protection Agency under the Environmental Assessment Regulations, 2021. Therefore, SEPA's NOC will not be required for the sub-project.

ESMP report also presents the sub-project's site-specific baseline data collected for physical and biological components of the environment and an overview of the socio-economic aspects of the sub-project area. The baseline profile has been developed through environmental and social surveys of the existing situation of the Sub-project and the available secondary data from published literature and previous studies conducted in the Sub-project area. The section on physical environment includes Climate (Temperature, Precipitation, Wind

Speed and Direction), Air Quality, Noise Quality, Water Quality, Topography, Soil and Geology, Water Resources, Sewerage & Drainage System, Seismology and Protected Sites.

Ambient air quality monitoring was conducted for 24 hours at two different spots along the sub-project site. Average 24 hours monitoring results of Carbon Monoxide (CO), Ozone (O_3), Oxides of Nitrogen (NO), Nitrogen Dioxide (NO_2), Sulphur Dioxide (SO_2), Suspended Particulate Matter (SPM) and Lead (Pb) are complying with SEQS limits at the sub-project site. Meanwhile, average 24 hours monitoring results of Particulate Matter of size10 Microns (PM_{10}) and Particulate Matter of size 2.5 Microns ($PM_{2.5}$) are above the SEQS Limits at the sub-project site.

Noise level monitoring was also conducted at two different spots at the sub-project site. The results are not complying with SEQS limits at both the sampling points at sub-project site.

Microbiological, Physical and Chemical parameters of tap water quality testing results are complying with SSDWQ at the sub-project site and wastewater quality testing results are also complying with SEQS limits at the sub-project site.

Results of 24 hours ambient air quality monitoring, noise quality monitoring, tap water quality and wastewater quality testing are attached at **Annexure-K: Environmental Monitoring and Testing Reports**.

The Sub-project is located in Zone 2B of seismology. The Zone 2B has minor to moderate damaging effects with peak ground acceleration of 0.16 g to 0.24 g.

Sub-project area is covered with the flora *species of Phoenix dactylifera, Conocarpus erectus, Azadirachta indica, Prosopis juliflora, Acacia nilotica, Syzygium cumini, Terminalia cattapa, Ficus benghalensis, Eucalyptus globules, Ficus religiosa and Calotropis procera.* However, during the rehabilitation work proposed under this sub-project, there is no need of tree cutting.

The socio-economic features of the baseline focused on social impacts and specific aspects of the sub-project area including population, ethnic, religious and linguistic diversity, health and education, housing, recreational facilities and employment, transportation, affected structures and settlements, industrial and commercial activities, archaeological, historical, and cultural resources.

Stakeholder's engagement and consultations were carried out at the project conceptualization phase and at the time of preparation of this ESMP, by following the methodological steps, guidelines and procedures for social screening defined in Social Management Framework (SMF) of CLICK. Due to the COVID-19 situation, the consultative workshop was conducted by adopting the COVID-19 Standard Operating Procedures of the Government of Sindh, at the sub-project location on 29th May 2021with people of the area as part of the environmental and social screening study. Another round of Primary and Secondary Consultation Meetings was held on 12th November, 2021 and 11th November, 2021 respectively for preparation of this ESMP. The suggestions given in the consultative meetings and the social constraints highlighted by the stakeholders have been noted and duly incorporated in the ESMP.

Information dissemination was ensured for the proposed sub-project and a telephone number for complaint registration has also been provided on District Council's website/social media and on banners at the project site.

Minimal to moderate adverse impacts including some noise pollution, dust pollution and associated health and safety concerns for the local community and the construction workers may occur during the construction phase. However, according to the scope and nature of the works, mitigation measures will be taken into account to alleviate or lessen their potential risks. These impacts are discussed in detail and their mitigation measures and monitoring

requirements are encompassed in this ESMP which has been designed for implementation by following the Environmental and Social Management Framework (ESMF) of the CLICK Project.

The ESMP Covers;

a) the roles and responsibilities of District Council, PIU CLICK, the construction contractor, the Independent Monitoring Consultant, and the Design & Supervision Consultant towards implementation of the WB policy for environmental and social safeguards and the SEPA rules and regulations
b) The systematic monitoring of Environmental and Social compliance at the sub-project
c) The documentation, communication, and monitoring procedures for the sub-project

This ESMP also includes an estimated cost of **PKR. 1,160,000/-** for implementing construction stage environmental and social monitoring activities, which will be included in the contract for this sub-project. Proper implementation of the ESMP will ensure the sustainability of the sub-project.

Chapter 1. INTRODUCTION

1.1. Project Background

Karachi is Pakistan's largest city, its economic and financial hub and main seaport. However, despite its higher contribution to the local and national economy, the city has seen a continued neglect in the development and upkeep of the urban infrastructure and related services over the last few decades. The city of Karachi is now considered among the world's least livable cities. The city ranks in the bottom five cities (out of 140), performing poorly in the dimensions of livability, health, environment, safety and education[1].

The Karachi City Diagnostic Study by the World Bank estimates an investment requirement of at least US$9-10 billion over the next 10 years to close the infrastructure and services gaps[2].

Therefore, the World Bank is assisting the Government of Sindh (GoS) for strengthening the institutional and financial capacity of the Karachi local councils (Karachi Metropolitan Corporation (KMC), Seven District Municipal Corporations (DMCs) and District Council Karachi) to deliver and maintain critical urban infrastructure and services through the project 'Competitive and Livable City of Karachi (CLICK)'.

1.2. The Project: Competitive and Livable City of Karachi (CLICK)

The development objective of the project is to improve urban management, service delivery and the business environment in Karachi with collaborative efforts of local government, Karachi Municipal Corporation (KMC), the seven District Municipal Corporations (DMCs) and District Council as well as other agencies. The proposed project also aims at enhancing city financing, private sector participation as well as regulatory environment for improved service delivery.

1.3. Project Components

There are four components of the project;

Component 1 – Performance-Based Grants to Local Governments and Capacity Building.
This component finances the provision of performance-based grants (PBGs) to Karachi local councils (LCs) upon achievement of specified institutional strengthening measures, to incentivize LCs to improve management capacity and enhance city competitiveness. LCs use these grant funds to implement the sub-projects for infrastructure and services under their mandate in line with the needs of citizens and businesses. To assist the LCs in achieving the institutional strengthening measures, and to manage and implement the performance grants system, this component also finances the provision of technical assistance (TA), and project implementation and management by the Local Government Department (LGD) of GoS. Sub-projects to be implemented by LCs are selected based on a comprehensive screening and risk reduction procedure. The sub-project is being financed through the "Minimum Condition" grant 2020-2021of the World Bank and is being executed under Component-I of the CLICK Project.

Sub-component 1.1: Performance-based Grants to Local Councils; and
Sub-component 1.2: Technical Assistance and performance grants implementation and management.
Component 2 – Technical Assistance for reforming urban Property Tax administration and system indicative financing
Component 3 – Improving City's Competitiveness and Business Environment
Component 4 – Technical Assistance for Solid Waste Management (indicative)

1.4. Approved Sub-project

The title of the sub-project is "Rehabilitation of Existing Sewerage line from Dawood Shoro Goth to Sukhan Nadi, District Council, Karachi". The sub-project has been identified by District

[1] Global Livability Index 2018 of Economist Intelligence Unit
[2]World Bank, "Karachi: Rapid Environmental Diagnostic Report"

Council in Dawood Shoro Goth of Karachi, under the CLICK interventions. " In this sub-project, rehabilitation of a sewerage line from Mateen complex (Dawood Shoro Goth) to designated disposal point (existing sewer manhole of 24 inch dia. sewerage line) will be carried out.

As per World Bank's Operational Policy 4.01 (Environmental Assessment), ESR screening has been conducted following the of scheme's identification to determine the type and magnitude of the E&S impacts.

The project only involves rehabilitation of sewerage line of approximately 1.7 km. The project falls in Category "B"[3] according to the World Bank's Operational Policies as defined in Environmental and Social Management Framework (ESMF) of CLICK. Therefore, a detailed Environmental and Social Management Plan (ESMP) has been prepared prior to the commencement of the sub-project as presented in the subsequent sections of this document.

[3] Categorization of CLICK Sub-projects (EMF) 2019

Chapter 2. Environmental and Social Management Plan (ESMP) Overview

The Environmental and Social Management Framework (ESMF) for the CLICK Schemes requires that an Environmental and Social Management Plan (ESMP) needs to be prepared with the scheme application when the eligible scheme includes E&S impacts and specific mitigation measures (physical works or management activities). Therefore, the preparation of ESMP is required for the "Rehabilitation of Existing Sewerage line from Dawood Shoro Goth to Sukhan Nadi, District Council, Karachi".

The Environmental and Social Management Plan (ESMP) has been prepared by the District Council using the guidelines provided by the World Bank in the ESMF of CLICK and Environmental and Social Screening Report (ESR) findings, with active support from the Environmental and Social Cell (ESC) of PIU CLICK and Design and Supervision Consultant. The ESMP highlights a set of mitigation, monitoring, and institutional measures to be taken during design, construction and operation phases to eliminate or reduce adverse environmental and social impacts to acceptable levels.

The scope of work for preparation of the ESMP is mainly focussed on:

- Carrying out an impact assessment to develop ESMP for the proposed project in compliance with Sindh Environmental Protection Act (SEPA) 2014, relevant rules and regulation and World Bank Operational Policies, and in accordance with all the applicable laws regarding drain and sewerage line rehabilitation/construction.

- Identification of significant environmental and social issues of the proposed sub-project and preparation of the necessary mitigation plans.

During the preparation of the Environmental and Social Screening Report (ESR), consultations on the ESMP were held. The comments/suggestion raised during the consultations, are incorporated in the ESMP before making it a part of the sub-project documents that includes the civil works contract of the sub-project to be submitted to the World Bank for approval.

2.1. Data Collection

After the nomination & mobilization of the ESMP Team, the foremost task is the collection of data regarding the sewerage line's physical condition and the proposed maintenance and rehabilitation actions to be applied.

The project team made number of site visits to the sewerage line corridor to collect baseline environmental (physical and ecological), and social data. This data collection was integral to forming the ESMP plan to identify mitigation measures for the Sub-project's activities.

2.2. Analysis and Interpretation

The qualitative and quantitative data is used to develop an ESMP report. Other than the site-specific data and information gathered from visits and site research, as well as from public consultations, all the data was analyzed and interpreted for the purposes of the ESMP. The data was used towards drafting vital mitigation measures that would be implemented during construction and post construction phase/operational phase of the project.

2.3. Roles and Responsibilities

The institutional arrangements, roles and responsibilities provided in this ESMP presents a detailed description of the environmental and social measures to be adopted for the Project implementation.

The roles and responsibilities of various agencies in undertaking these activities are defined including identification of the institutional activities that will be required to allow those organizations to fulfill their nominated roles and responsibilities. The roles and responsibilities of the proponent and the institutions are identified below in Table 2.1:

Table 2.1: Responsibilities for Environmental and Social Management & Monitoring

AGENCY	RESPONSIBILITIES
District Council, Karachi	• Overall responsibility for project construction and operation and maintenance; • Ensure that funds are available to properly implement all agreed environmental and social safeguard measures; • Ensure that the project, complies WB's Operational Policy (OP); • Ensure that Project complies with National and Provincial laws and all applicable environmental laws and regulations; • Ensure that tender and contract documents for civil works include all relevant parts of the environmental and social assessment and project agreements; • Submit quarterly safeguards monitoring report to WB; and • Promote institutional cooperation with General Labor Inspectorate to enforce compliance with labour laws, including occupational, health and safety rules and avoidance of Gender Based Violence • Ensuring the efficient and effective Grievance Redressl Mechanism is in Place (with all record) and complaints raised by community and workers are addressed immediately.
Project Implementation Unit (PIU)	• Ensure that ESMP mitigation measures are implemented to mitigate environmental and social impacts at acceptable levels; • Ensure that Project complies with WB's OP and National and Provincial government laws and regulations; • Ensure issues related to sexual harassment and gender-based violence between workers and with communities are effectively dealt with respect to the applicable laws and rules; • Undertake environmental and social management capacity building activities for District Council and orientation and awareness training for contractors; • Ensure that District Council has obtained the necessary environmental NOC(s) from SEPA prior to award of civil works contracts. In this case, NOC from SEPA will not be required. • Assist District Council to implement a Grievance Redress Mechanism (GRM), as described in the SMF, to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the Project's environmental and social performance; • Undertake monitoring of the implementation of the ESMP (mitigation and monitoring measures); • Review of quarterly environmental and social monitoring reports submitted by the Independent Monitoring Consultant (IMC) before onwards submission to the WB; • Coordinate and liaison with Independent Monitoring Consultant IMC for the monitoring and reporting of ESMP.
Supervision Consultant	• Provide training and capacity building of District Council and contractor staff for implementation of ESMP prior to the submission of contractor's Construction Environmental and Social Management Plan (CESMP); • During detailed design notify District Council and PIU of any change in alignment or project design/components and provide information to the District Council and PIU to facilitate preparation of any additional environmental and social assessment prior to project construction as required in the ESMP (e.g., preparation of new or supplementary environmental and social assessment in case of change in alignment that will result in adverse environmental and social impacts that are not within the scope of during the

	preparation of the ESMP; • Assist PIU in the review and approval of the contractor's ESMP(C-ESMP) for Sub-project; • Assist District Council to undertake monitoring of the implementation of the ESMP (mitigation and monitoring measures) • Assist District Council to prepare quarterly progress report for submission to PIU.
Contractor	• Participate in the induction training on ESMP provisions and requirements delivered by the PIU and District Council; • Prepare the CESMP and submit to PIU for approval; • Ensure that all workers, site agents, including site supervisors and management participate in training sessions delivered by PIU and consultant. Maintain a record of training and conduct of awareness sessions for staff to ensure compliance with environmental and safety statutory and contractual obligations including the approved CESMP; • Ensure compliance with environmental and social statutory and contractual obligations and proper implementation of WB requirements including approved CESMP; • Based on the results of CESMP monitoring, cooperate with the PIU and consultant to implement environmental and social corrective actions and corrective action plans; • Based on the results of ESMP monitoring, cooperate with the PIU to implement environmental and social corrective actions and corrective action plans. • Respond promptly and efficiently to requests and instructions from PIU and District Council for environmental and corrective actions and implement additional environmental and social mitigation measures, provide sufficient resources for the proper and timely implementation of required mitigation measures in the Environmental and Social Management Plan.

2.4. Reporting Requirements

During the entire process of implementation of this ESMP, all data and reports are required to be recorded and properly filed and documented for future reference in the audit stage and public disclosure. These documents include all screening forms, safeguards and monitoring reports produced, records of public consultations, records of all complaints and grievances logged, environmental permits and development conditions.

The following three-tier reporting system will be followed:

Contractor's Report

- The selected Contractor will prepare monthly reports reflecting the regular monitoring of results and findings. Checklists and other monitoring forms and supporting documents will be completed and submitted to the consultant as requested. Minutes of consultation with the communities and Project Affected Persons, including the performance evaluation of the programs/mitigation measures implementation will also be documented and submitted.
- All the above information will be in compliance with the endorsed ESMP requirements. These will be used as bases in the preparation of Compliance Monitoring Reports. Checklists for use by the Contractor and others are presented in **Annex A**.
- The selected Contractor's Monthly Progress Report to the consultant shall contain the checklists and a summary of the mitigation measures implemented for the sub-project, and the off-site installations as well and any complaints received during the relevant period including the complaints referred into the Grievance Redress Mechanism (GRM), ensuring respect to confidentiality for gender and other discrimination- based complaints.

Supervision Consultant's Report

- The Supervision Consultant (SC) shall assist the PIU and District Council to monitor the implementation of environmental and Social mitigation measures by the Contractor on a monthly basis. Subsequently, the SC shall report their compliance report of environmental and social mitigation measures adopted carried out by Contractor to the PIU and District Council on a quarterly basis.
- The consultant's quarterly Progress Report to District Council and PIU shall contain a summary of the implementation of environmental mitigation measures for all sections of the Sub-project.

PIU's Report

- The PIU will review the reports submitted by SC, Contractor and IMC and submit to Bank with a summary of environmental monitoring and the implementation of mitigation measures for the Sub-project for their review.

- These reports will incorporate the main issues raised in the Contractor's monthly reports and the environmental monitoring reports prepared by the Supervision Consultant and endorsed by PIU.

Chapter 3. SUB-PROJECT DESCRIPTION

3.1. Details of the Sub-Project

The main access road to Dawood Shoro Goth starting near Mateen Complex on National Highway, N-5, remains inundated with sewage due to choked and damaged sewerage lines and overflowing gutters at the Sub-project site. Therefore, the people living in the adjoining area suffer due to insanitary conditions and foul smells and are at the risk of spread of diseases in the neighborhood.

Considering the need for proper sewerage in this area, the District Council is planning to rehabilitate the sewerage line from Mateen complex (Dawood Shoro Goth) to designated disposal point (existing sewer manhole of 24 inch dia. sewerage line) via Shah Latif Town Sector19-B, UC-25, under this sub-project. The tentative cost of the sub-project is around: PKR. 56 million.

3.2. Sub-project Features

The salient features of the proposed sub-project are presented in Table 3.1.

Table 3.1: Sub-project Salient Features

Sub-Project salient Features	Details
Jurisdiction:	District Council
Location:	Dawood Shoro Goth (From Mateen Complex on National Highway, N-5, to designated disposal point in the sewerage manhole of 24"dia existing line, Shah Latif Town Sector19-B, UC-25)
Diameter:	18"
Length:	1.7 km
Main scope of work:	Rehabilitation of sewerage line work will require: excavation of trenches, bedding of sewer line, laying of RCC sewer pipes and their jointing, testing of sewer line, backfilling of trenches, leveling of ground, installation of lateral pipe connections and provision of manholes with covers.
Total Duration:	03 months
Labor requirements:	100-150 persons estimated (Skilled and unskilled)
Professional staff:	10
Supervision consultant staff:	04

3.3. Sub-Project Location

The proposed sub-project location is shown in the **Figure 3-1**.

Figure 3-1: Location Map of Sub-project Site

3.4. Sub-Project Significance

The proposed sewerage line is an important component of the infrastructure for the Sub-project area because currently the local community faces a good deal of problems due to the poor sewerage system. Due to overflowing gutters pedestrians find it difficult to walk along the road and go about their daily routine. Poor sewerage also disrupts traffic flow and poses risk of many accidents and safety hazards as people especially children often fall in the manholes. Furthermore, inundated sewerage lines cause insanitary conditions in neighborhoods, where they have the potential to spread a variety of waterborne illnesses.

In general, the project has the following objectives:

- To provide safe and efficient sewerage system to the residents.
- To improve the sanitary conditions in the area and avoid spread of diseases
- To improve overall safety, which is disturbed due to the existing damaged sewerage system.
- To provide for safer traffic movements along the road.

3.5. Sub-project Environmental Setting

The proposed sub-project site is located in Dawood Shoro Goth, District Council, Karachi. Photographs of the proposed Sub-project can be seen as **Annex B**.

3.6. Resource Use Matrix

Construction Camp and Housing Facilities

The Contractor in accordance with Clause#6 of the Conditions of Contract shall provide description of his construction camp's facilities and staff housing requirements. The contractor shall be responsible for pumps, electrical power, water and electrical distribution systems, and sewerage system including all fittings, pipes and other items necessary for servicing the contractor's construction camp. The contractor shall list or explain his plans for providing these facilities for the service of the contract as follows:

1. Site Preparation (clearing, land preparation).

2. Provision of Services.
   a) Power (expected power load.).
   b) Water (required amount and system proposed).
   c) Sanitation (sewage disposal system).

3. Construction of Facilities
   a) Contractor's Office, Workshop and Work Areas (areas required and proposed layout, type of construction of buildings).
   b) Warehouses and Storage Areas (area required, type of construction and layout).
   c) Housing and Staff Facilities (Plans for housing for proposed staff, layout, type of construction).

4. Construction Equipment Assembly and Preparation (detailed plans for carrying out this activity).

5. Other Items Proposed (Security services).

Table 3-2: Resource Use Matrix for on-site services at Camp site

S.NO	Items	Source	Quantity
1	Water Consumption	Water Tanker	100 – 150 Gallons per day
2	Electricity Consumption	Diesel Generator	11 kVA , Full Load (litres/hr.): 3.00
3	Gas Consumption	Gas Cylinders	Gas consumption from a 50 liter cylinder, this amount of fuel will last for about 44 hours for normal usage.
4	Labor Camp	Tents or Cabins	100-150 local labor Persons.
5	Construction Time	03 months	
Note: -All resources may vary according to the use of services required on site during the real time needs. -Disposal of solid waste will be responsibility of the contractor. It will be ensured that solid waste must be disposed of at the designated place of local government.			

3.7. Sub-Project Commencement Details

The sub-project construction activities are expected to be initiated by January, 2022 which will be continued till end of March, 2022. The expected timeframe for the proposed sub-project can be seen in Table 3-3 below.

Table 3-3: The Tentative Schedule for the proposed sub-project

Details	Duration
Expected date for the start of Construction/Rehabilitation Activities	After receiving necessary approvals in in FY 2020-2021
Expected year for completion	March-2022

3.8. Sub-Project Activities

3.8.1. Design Phase

To design the sub-project, consultancy services have been procured for providing assistance in planning construction activities, selection of sites, engineering designing, cost estimation, preparation of bidding documents, contracts procurement, bid evaluation, award of contract, construction supervision, quality assurance, and monitoring and evaluation of civil works (sub-project) and contract management under CLICK.

Existing Condition:

Sewerage system along the road is badly damaged and choked. Due to which, the untreated sewage spills over from manholes and broken pipes and remains on the road causing inconvenience and health hazards for the local population and other road users. There is a foul smell all around the area and the traffic flow also remains disturbed due to overflowing sewage and open manholes.

Proposed Rehabilitation Work:

Sewerage network is provided to collect sewage coming out from the residences, commercial area and institutions along the road. The objective of proposed rehabilitation of the sewerage system is to improve the existing system in such a way that it can be operated with maximum reliability, efficiency and minimal maintenance for collecting and discharging the sewage into the provided disposal point.

The sewage generated in the area is 1.6 MGD (2.97 cusec) which is based on the population of approximately 25,000 people as provided by the District council.

Based on the above parameters, an 18 inch diameter sewerage line is proposed to carry sewage from Mateen complex (Dawood Shoro Goth) to the designated disposal point in the existing sewer manhole of 24 inch dia. sewerage line. The lateral sewer pipes from streets of

the sub-project area will be connected to this 18 inch pipe line. The total length of the proposed line is approximately 1.7 km.

In the following Figures 3-2, 3-3, and Figure 3-4, the proposed sewerage line, Typical RCC Manhole Plan and Layout plan of the proposed sub-project are shown respectively for better understating of the proposed design.

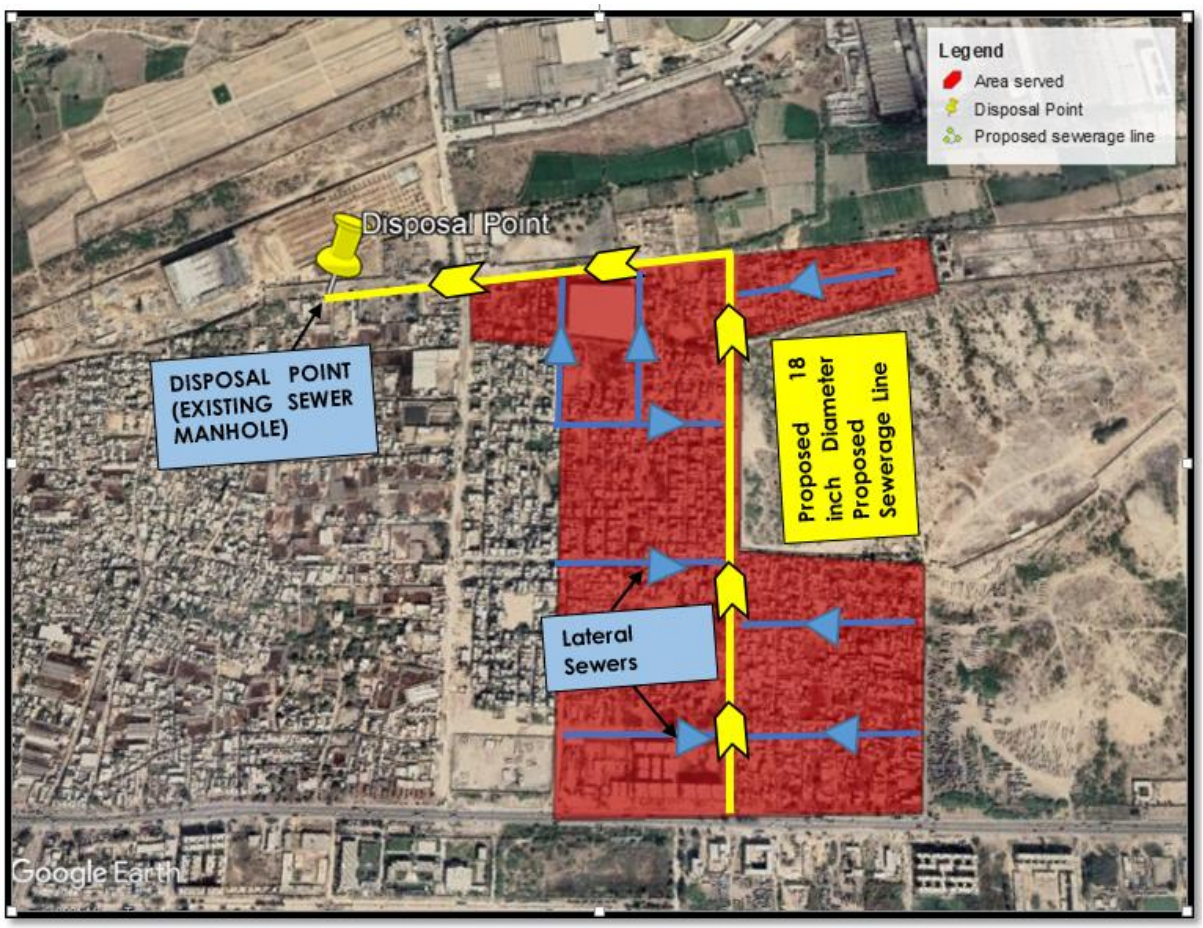


Figure 3-2: Depicts the Proposed Sewerage Line

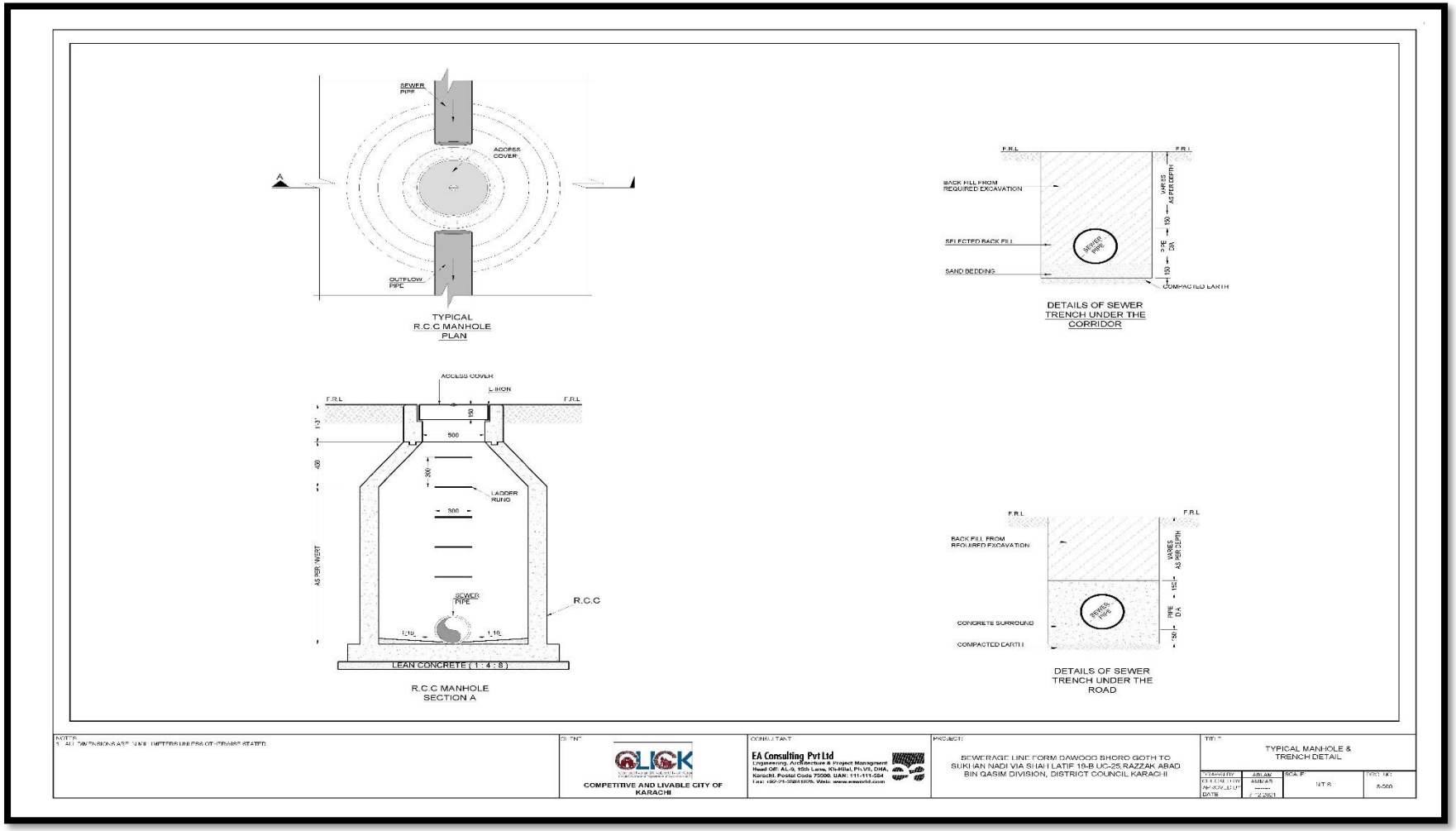


Figure 3-3: Typical RCC Manhole Plan

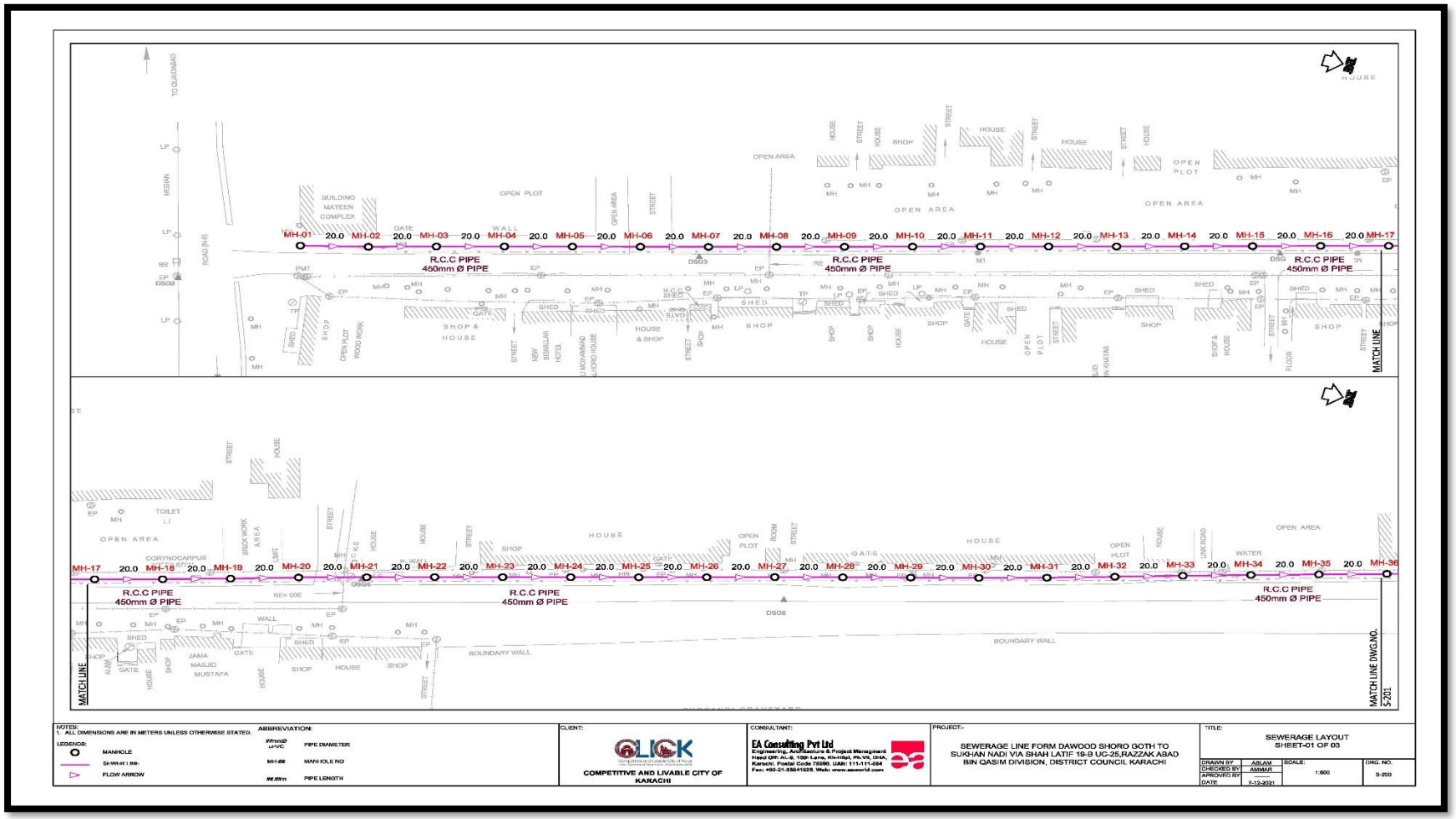


Figure 3-4: Layout Plan of Proposed Sub-project

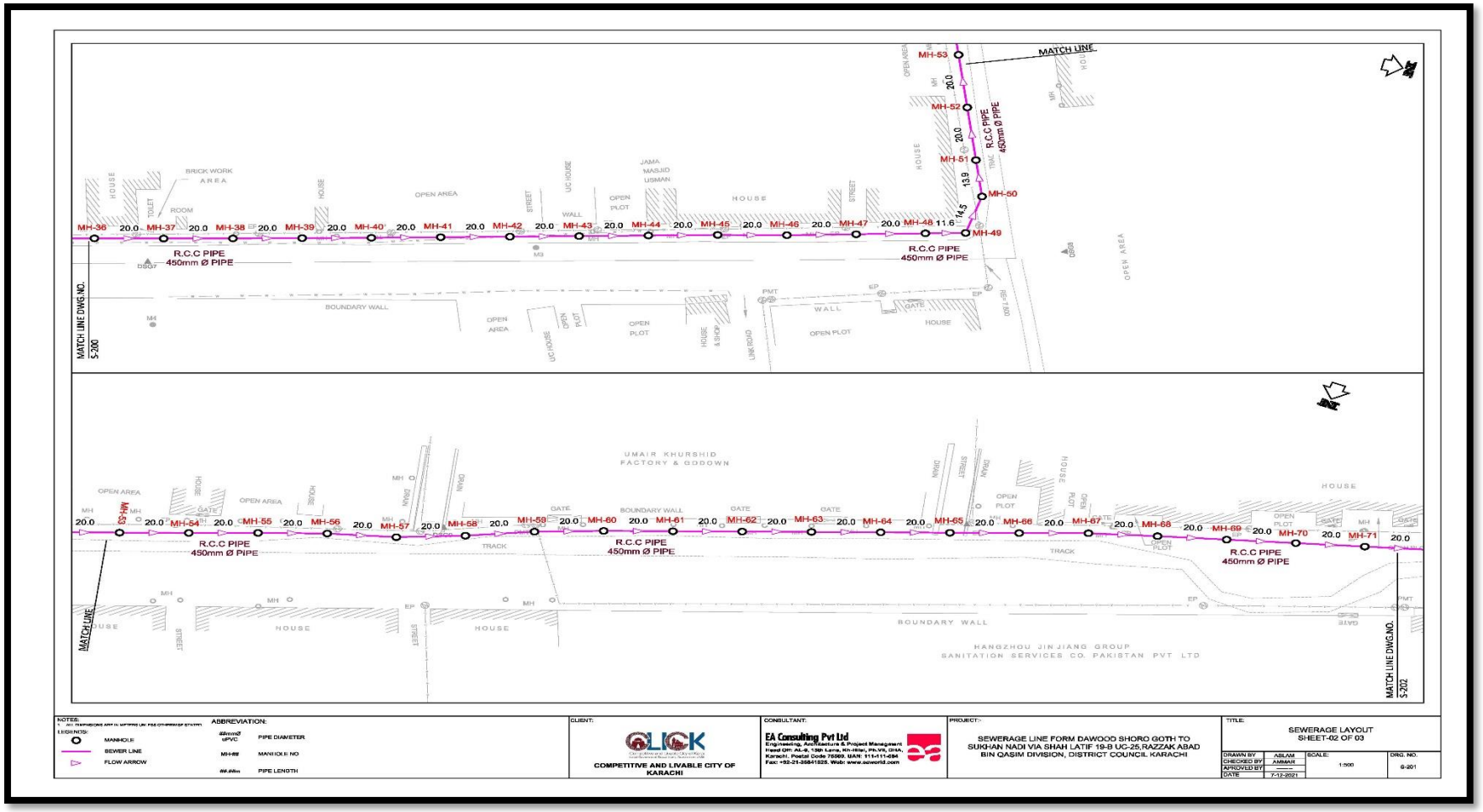


Figure 3-5: Layout Plan of Proposed Sub-project

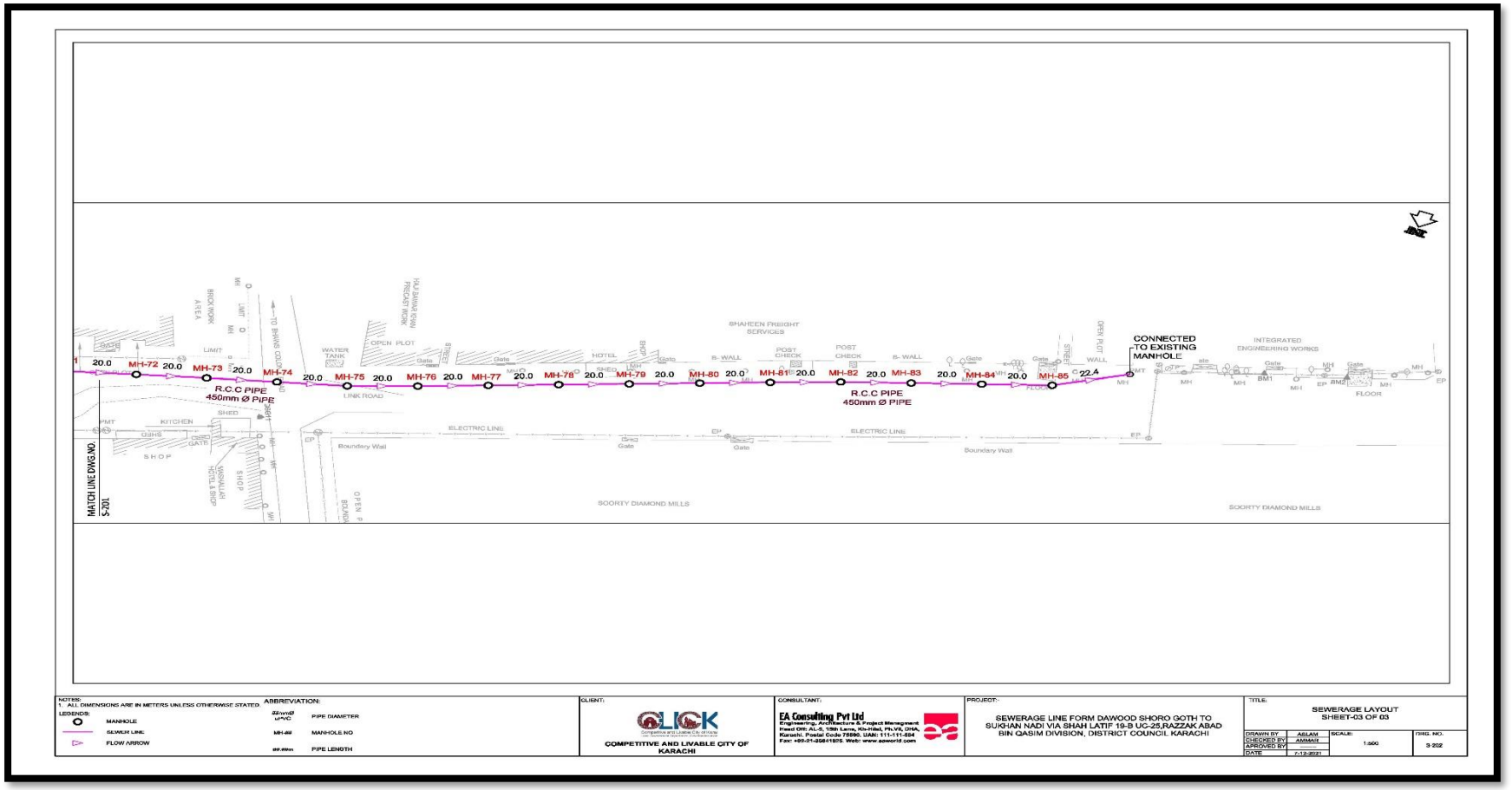


Figure 3-6: Layout Plan of Proposed Sub-project

3.9. Construction Phase

The construction activity of the proposed sub-project will commence after getting approval from the World Bank and the Commissioner's Office. This phase will involve the civil works as following:

-Mobilization
-Excavation of Trenches
-Bedding of Sewer Line
-Laying of Sewer Pipes and their Jointing
-Testing of Sewer Line
-Backfilling of Trenches and Leveling of Ground

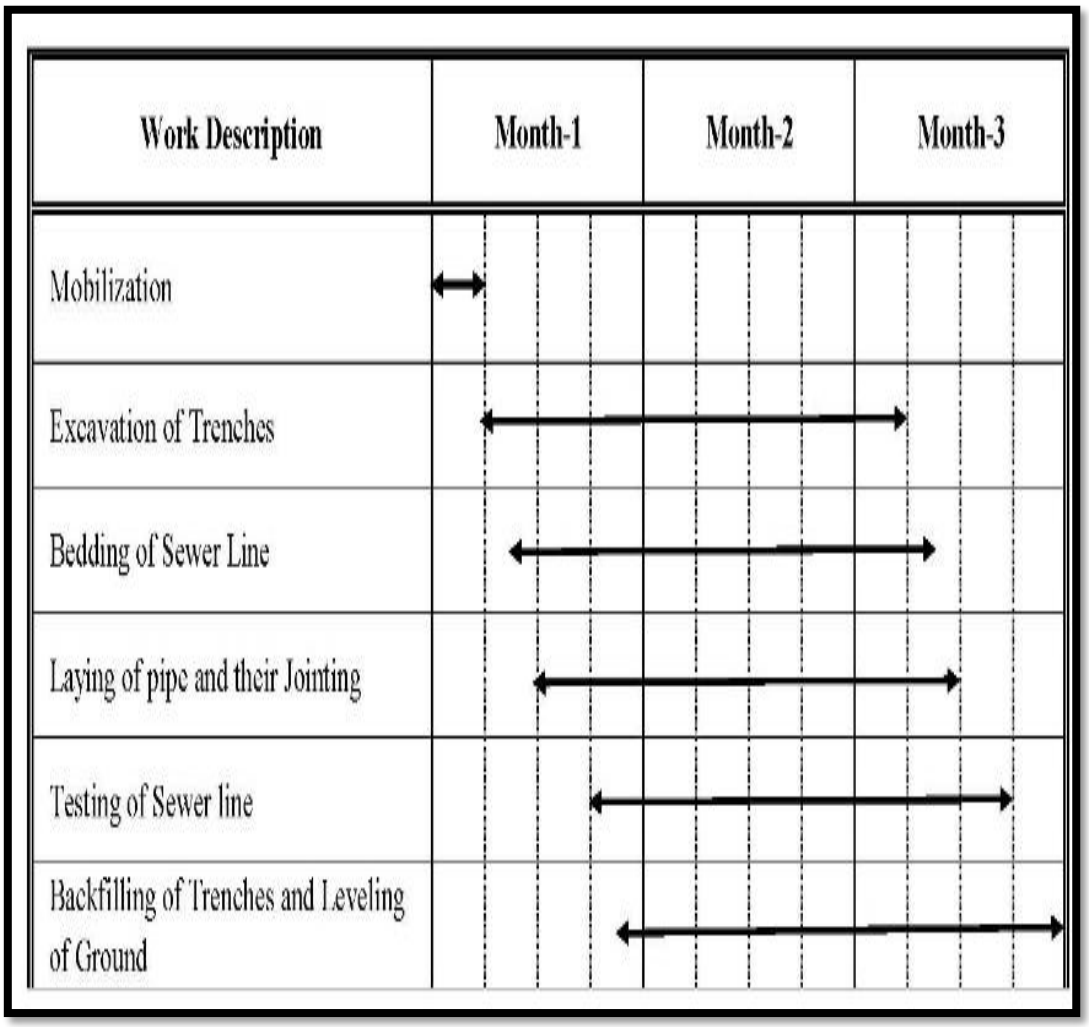


Figure 3-7: Gantt Chart for Proposed Sub-project

3.10. Operation and Maintenance Phase

The overall responsibility of compliance of the operational and maintenance phase will lie with the District Council in line with the existing practices and ESMF of the CLICK.

Recommendation for operation and maintenance: District Council to follow the following measures to mitigate the environmental and social impacts during operation phase.				
Operational Phase				
Proposed Mitigation Measures	**Implementation Responsibility**	**Monitoring Parameter(s)**	**Frequency**	**Monitoring Responsibility**
-Periodically check the condition of manholes and sewerage drain. -Regularly repair the damage items immediately. -Frequently ensure the proper Solid & Liquid Waste management at site.	District Council	Visual inspection	As per the District Council existing SOPs/ Monitoring regime	Focal Person of District Council and dedicated staff

Chapter 4. APPLICABLE LAWS

4.1. National and Provincial Requirements

The sub-project will be in accordance with the following national and provincial policies and laws outlined.

4.2. National Policies and Laws

-Pakistan Penal Code
-The Antiquities Act, 1975

4.3. Provincial Policies and Laws

-Sindh Environmental Protection Act 2014 (SEPA 2014).
-The Sindh Local Government Act 2013
-Sindh Strategy for Sustainable Development, 2007
-Sindh Drinking Water Policy 2017
-The Karachi Water and Sewerage Board Act, 1996 (KWSB Act)
-The Sindh Differently Able Persons (Employment, Rehabilitation and Welfare Amendment) Act, 2017
-The Sindh Commission on the Status of Women Act, 2015
-Sindh Bonded Labour (Abolition) Act 2015
-Sindh Labour Law
-Sindh Minimum Wages Act, 2015
-Sindh Payment of Wages Act, 2015
-The Sindh Occupational Safety and Health Act (2017)
-The Sindh Transparency and Right to Information, 2016
-Sindh Cultural Heritage (Preservation) Act, 1994

4.3.1. Non- Applicable Provincial Laws/Regulations

- Sub-project is not fall in the any Schedule (Schedule I, Schedule II & Schedule III) of Sindh Environmental Protection Agency, Environmental Assessment Regulations, 2021. Therefore, SEPA's NOC will not be required for the sub-project.

4.4. Applicable World Bank Requirements

The sub-project will be in accordance with the relevant World Bank safeguards policies that are triggered as given in Table 4.1 below:

Table 4-1: Safeguard Policies Triggered and Compliance Status

#	Environmental Assessment	Policy Reference	Triggered	Remarks
1.	Environmental Assessment	OP/BP 4.01	√	CLICK is categorized as category B with partial assessment. The sub-project has been screened as per OP 4.01 and is envisaged to have low to minor environmental and social impacts. The sub-project involves only rehabilitation activities of the existing sewerage line.
2.	Physical Cultural Resources	OP/BP 4.11	√	Archaeological site of Chaukandi Tombs are located in the vicinity of sub-project site. However, the Chaukandi Tombs are properly separated from the Sub-project Site by a boundary wall.

				Therefore, the rehabilitation work proposed at the Sub-project site will not affect the archaeological site. There were no identified archaeological, historical, and cultural resources within the sub-project's RoW. The sub-project area is already in use of the local residents as well as general traffic. However; Chance Find procedures will be applied in case of any finding. Contractor has to follow the Chance Find Procedure attached with the ESMP as Annex (E). Even though this OP has been triggered for this project, it is not envisaged to be applicable for this activity. The sub-project activities will be carried out only along the sewerage line with no adverse impact to any cultural, archaeological, historical, heritage, or religious significant site being observed.
3.	Involuntary Resettlement	OP/BP 4.12	√	This OP is triggered for the overall project of CLICK. For the sub-project activity, screening has been carried out to ensure that there is no dispute and tenants over the land used for the proposed sub-project, as well as not any Anti Encroachment Drive (AED) being carried out(refer to **Annex J**). At the initial stage only a few hawkers/ kiosks were identified. Their detailed survey is under process based on this survey detailed Report will be shared with the Bank prior to the commencement of the sub-project.
4.	Access to information	BP 17.50	√	This OP has been triggered for the overall project. It has been ensured that sub-project related information is put on the website of District Council, Karachi and CLICK

				and has been disseminated to the stakeholders to improve the design and implementation of the project.

Chapter 5. ENVIRONMENTAL AND SOCIAL BASELINE OF THE SUB-PROJECT AREA

This section of the Report describes the environmental and social baseline of the entire area for the proposed sub-project including physical, biological, socio-economic conditions and cultural aspects relevant to Sub-project. The baseline profile has been developed through environmental and social surveys of the sub-project existing situation and the available secondary data from published literature and previous studies in the sub-project area. Accordingly, the specific existing environmental and social baseline profile of the area served by the sub-project is presented hereunder:

5.1. Physical Environment

This section gives the detailed description about the physical environmental condition of sub-project area, District Council, Karachi. Following relating information of Physical Environment are listed below:

-Climate (Temperature, Precipitation, Wind Speed and Direction)
-Air Quality
-Noise Quality
-Water Quality
-Topography
-Soil and Geology
-Water Resources
-Sewerage & Drainage System
-Seismology
-Protected Sites

The information and data presented in this section of base line is built on the surveys conducted by the team, supplemented with the secondary data from published literature and previously conducted studies within the sub-project area.

5.1.1. Climate:

Karachi is located just above the tropical zone i.e. 24° North. It is situated along the coast of Arabian Sea. Both these factors influence the climate of Karachi. It can be characterized by dry, hot and humid condition. There is minor seasonal intervention of a mild winter from mid-December to mid-February into a long hot and humid summer extending from April to September, with monsoon rains from July to mid-September.[4]

The climate of sub-project location can be characterized by dry, hot and humid conditions. As the only meteorological station of Pakistan Meteorological Department (PMD) in Karachi is located at Jinnah International Airport which measures the overall Karachi climate data, therefore this station is taken as the main source to present the meteorology of the sub-project area.

5.1.2. Temperature:

The air temperature in Karachi Division and its coastal areas are generally moderate throughout the year due to presence of sea. Climate data generated by the meteorological station at Karachi Air Port represents climatic conditions for the region. The mean monthly maximum, minimum and average temperatures recorded during the last 5 years in Karachi to describe the weather conditions are shown in **Table 5-1**.

The maximum temperature range is 27°C – 38°C. The average temperature range is 20°C - 34°C. The minimum monthly temperature range is 17°C – 30°C.

[4] *Environmental and Social Management Plan (ESMP), Rehabilitation of Road from Coast Guard Chowrangi to Fishermen Village Korangi, Karachi Neighborhood Improvement Project (P161980), August 2018.*

Table 5-1: Maximum, Minimum and Average Temperature (Karachi)

Year	Month's Temperature in °C											
2017	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Max	27	30	32	36	37	35	32	32	32	34	32	29
Avg	24	27	29	32	33	33	30	30	30	32	30	26
Min	19	22	24	26	28	29	28	27	27	29	25	21
2018												
Max	28	30	32	35	38	35	32	30	30	36	34	29
Avg	25	27	29	32	34	32	30	29	28	33	31	26
Min	21	22	25	27	29	29	28	27	26	29	27	22
2019												
Max	27	27	30	34	35	36	33	31	34	35	30	27
Avg	24	24	27	31	32	33	31	30	31	32	28	24
Min	20	20	23	27	28	29	28	27	28	29	24	20
2020												
Max	23	29	29	34	35	34	34	32	32	34	31	27
Avg	20	25	26	31	32	32	32	30	30	32	28	24
Min	17	21	22	26	28	29	30	28	28	28	24	20
2021												
Max	27	30	32	33	34	33	32	31	-	-	-	-
Avg	23	26	29	31	32	31	30	29	-	-	-	-
Min	17	21	24	27	28	29	28	27	-	-	-	-
Source: *Extract from Temperature Graph (World Weather Online)*												

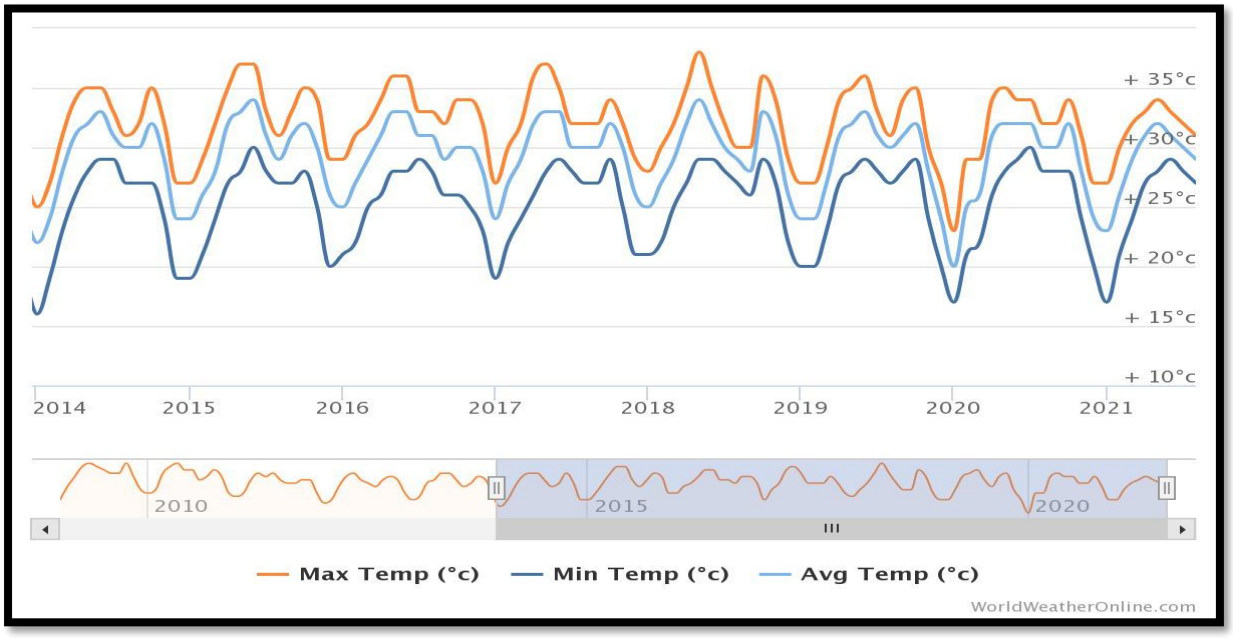


Figure 5-1: Maximum, Minimum and Average Temperature (Karachi)
Source: World Weather Online
*(*https://www.worldweatheronline.com/karachi-weather-averages/sindh/pk.aspx*)*

5.1.3. Precipitation

Rainfall data for Karachi was collected from Pakistan Meteorological Department (PMD). The annual maximum daily rainfall data was collected for 58 year from 1962 to 2020. Further, daily data was processed and represent in graphical form in **Figure 5-2** which shows more than 200 mm maximum daily rainfall was recorded in the year 1976 and last year 2020.

Heavy rain fall caused inundation on road and urban flooding in Karachi.[5] In last year (2020), due to heavy rain fall 41 people were killed in Karachi.[6] Therefore, during the monsoon season, adequate protective measures and necessary arrangements are required at construction project sites in Karachi.

[5] https://www.geo.tv/latest/368528-met-department-predicts-heavy-rain-for-several-parts-of-sindh-today

[6] https://www.samaa.tv/news/2020/08/karachi-rain-13/

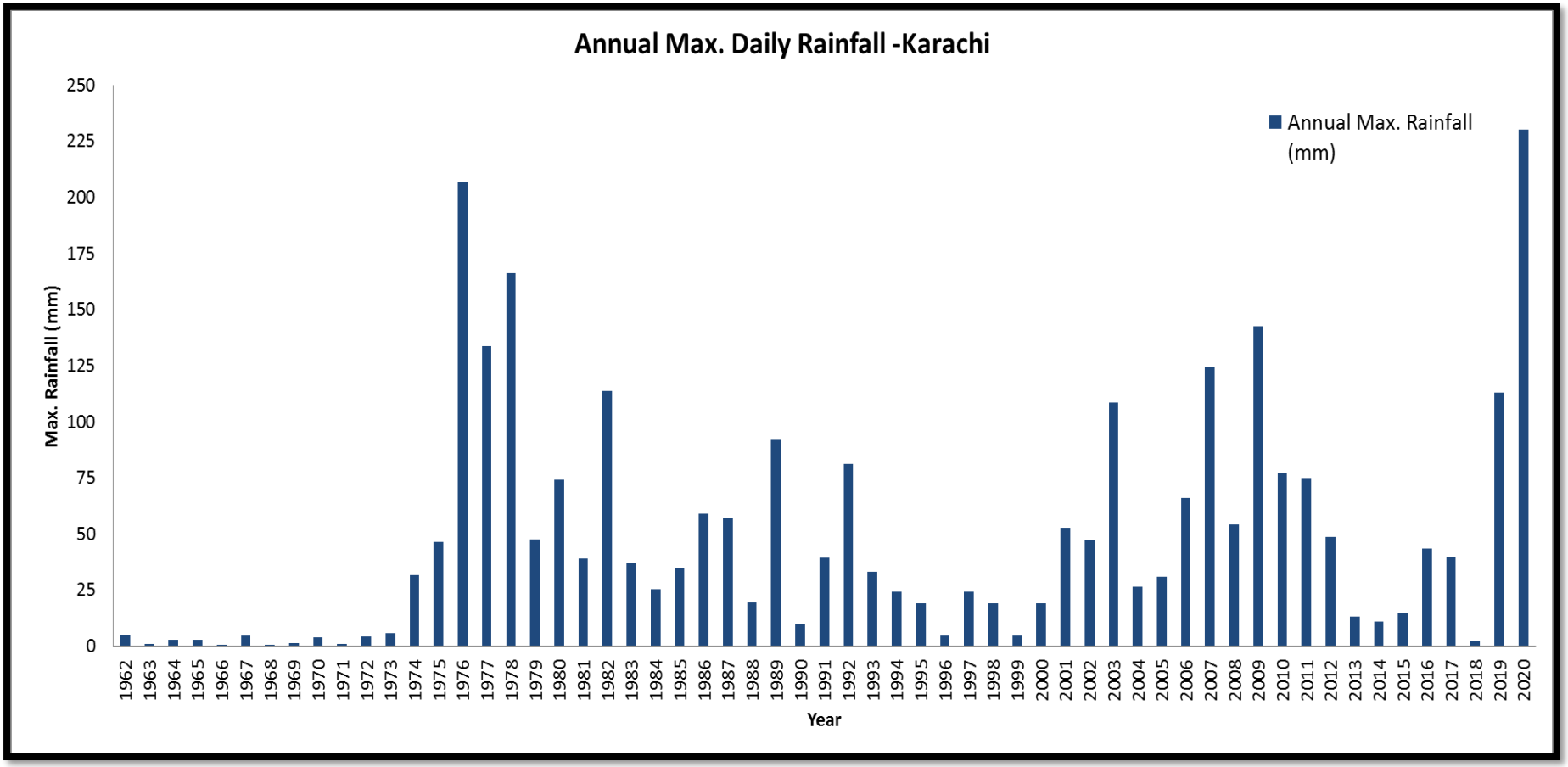


Figure 5-2: Annual Max. Daily Rainfall Karachi from 1962 to 2020

In the month of August 2019 and 2020 highest rainfall was recorded in Karachi. **Table 5-2** and **Figure 5-3** show the average monthly rainfall data of Karachi.

Table 5-2: Average Rainfall of Karachi

Year	Month's Average Rainfall (mm)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017	10.1	0.7	0.3	0	0	15.8	63.2	71	37.4	0	0.2	1.8
2018	0	0.5	0	0.2	0	16.1	30.5	37.9	7.6	0	0	0.5
2019	11.3	4.5	2.8	9	0.2	4.3	81.1	154.8	54.7	15.4	9.2	3.3
2020	9.6	0	1	0	0.4	6.3	20.9	161.5	1.9	1	0	0
2021	0	0	0	0	0.5	9.5	13.5	4.1	-	-	-	-
Source: *Extract from Rainfall Graph (World Weather Online)*												

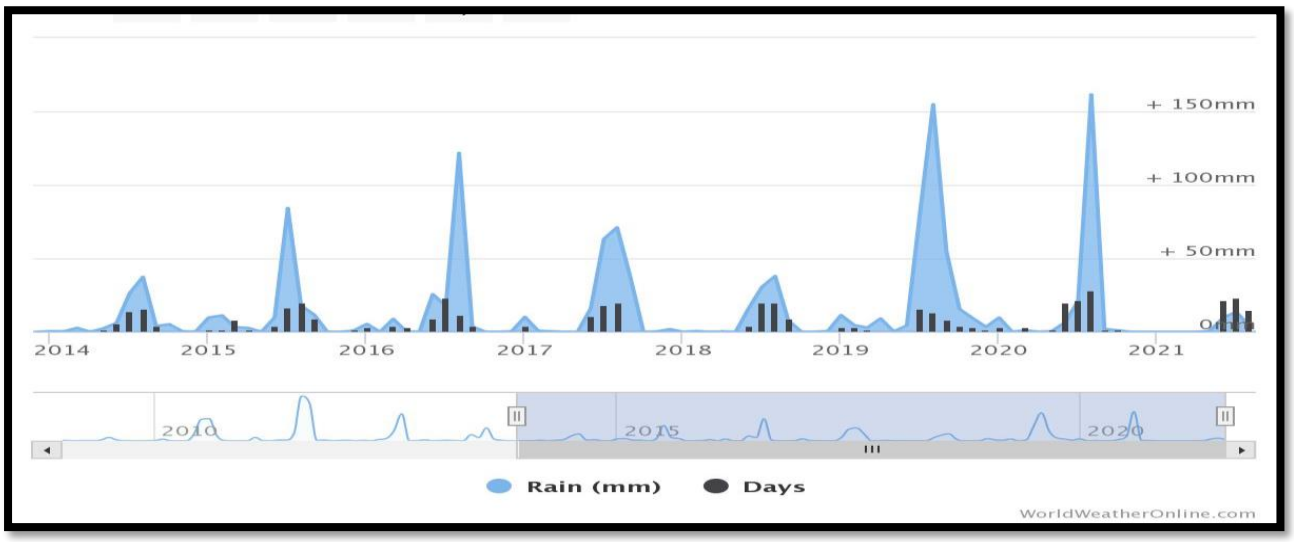


Figure 5-3: Monthly Average Rainfall (mm) of Karachi
Source: World Weather Online
(https://www.worldweatheronline.com/karachi-weather-averages/sindh/pk.aspx)

5.1.4. Wind Data

The wind speed in Karachi varies seasonally throughout the year. Karachi's wind is mostly pleasant because of the influence from the sea. Wind speeds data show that the windier part of the year lasts from April to September, after which the wind speed declines.

The wind speed has highest velocities during the summer months, when the direction is south-west to west. During winter, the wind blows from north to northeast, shifting southwest to west in the evening hours.

The wind usually carries sand and salt resulting in severe wind erosion and corrosion.

During the rehabilitation work, contractor will be required to ensure water sprinkling at the sub-project site and construction material will be properly covered.

Table 5-3 and **Figure 5-4** show the maximum and average monthly wind speed of Karachi. **Figure 5-5** shows the wind rose for Karachi.

Table 5-3: Maximum and Average Wind Speed (kmph) of Karachi

Year	Month's Wind Speed (kmph)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017												
Max	19.7	20.4	24.7	29.4	33.4	30.1	30.7	28.4	24.2	20.3	15.5	18
Avg.	13.3	13.5	16.2	20.4	23.6	23.8	26	23.9	19.5	14.4	10.7	13.3
2018												
Max	16.5	18	23.5	26.8	29.9	30.3	29.1	28.7	26.4	17.7	14.6	14.8
Avg.	10.3	11.6	16.8	19.4	21.6	25	25.2	24.7	22.1	11.7	9.5	10.1
2019												
Max	17.6	22.4	23.1	28.4	32.4	29	34.1	27.9	24.4	20.3	20.9	21.5
Avg.	12.3	16.3	16.7	22.6	26.7	23.8	30.8	24.1	20.7	15.2	15.8	16.8
2020												
Max	24.4	22.4	26.1	29	33.7	28.4	31.4	28.8	23.2	19.8	21.1	19.7
Avg.	18.6	15.7	18	21.6	26.6	24	26.9	24.6	19.5	14.2	14.9	14.6
2021												
Max	18.5	20.3	24.9	27.6	32.5	32	32.3	29.1	-	-	-	-
Avg.	13.1	14.2	17.7	21.4	27.1	28.4	29	26.4	-	-	-	-
Source: *Extract from Wind Graph (World Weather Online)*												

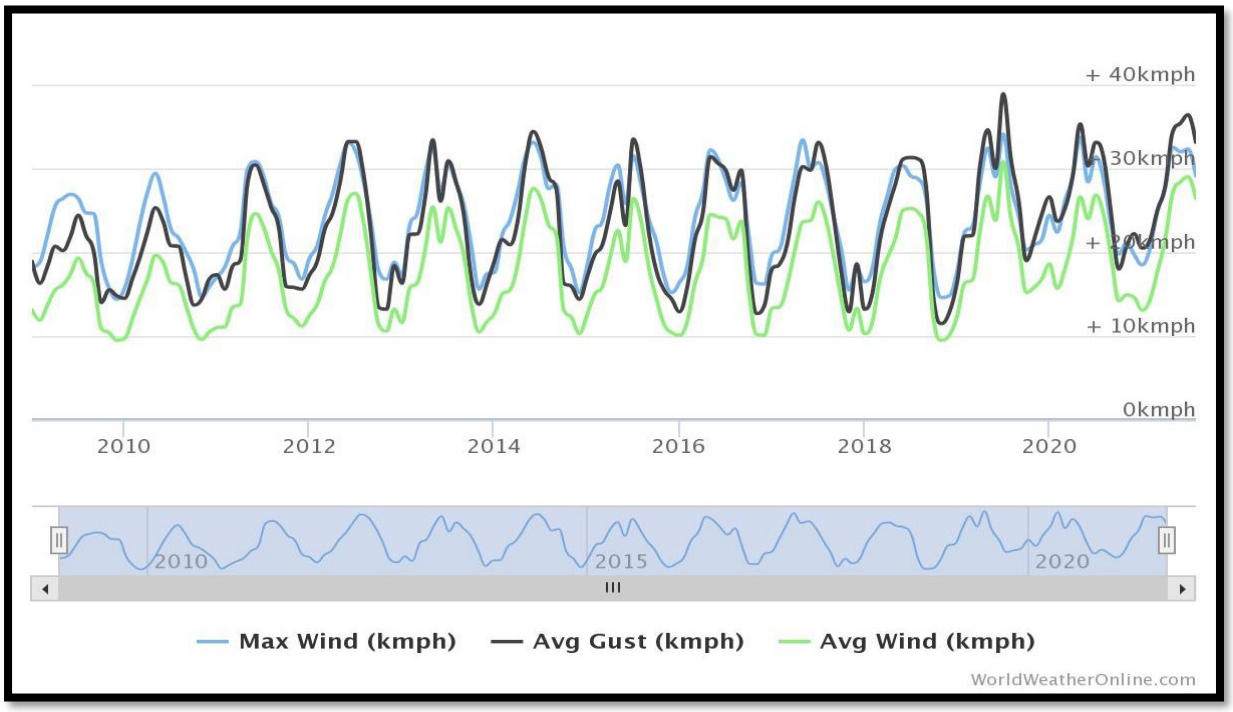


Figure 5-4: Monthly Average and Maximum Wind Speed of Karachi
Source: World Weather Online (https://www.worldweatheronline.com/karachi-weather-averages/sindh/pk.aspx)

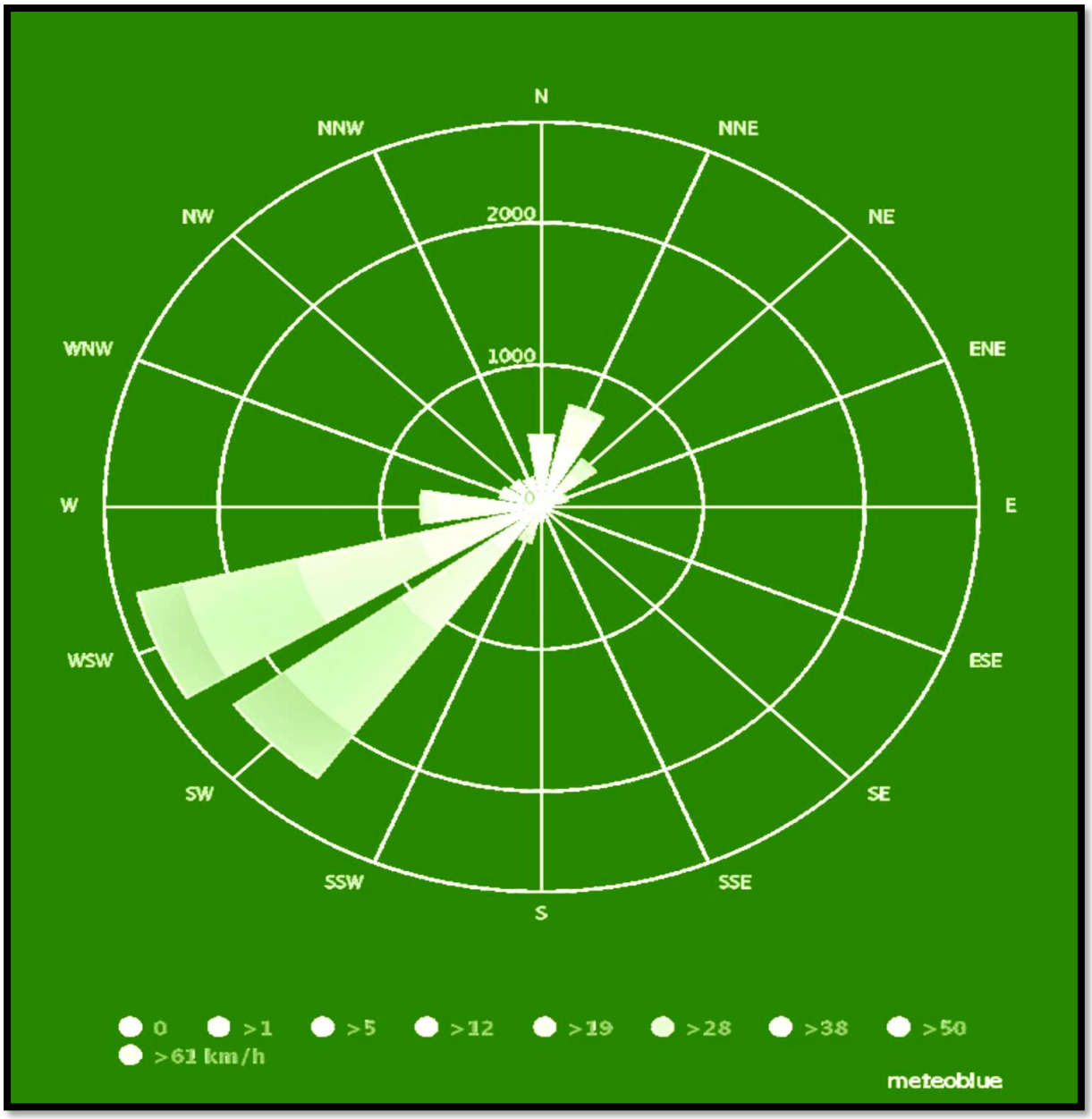


Figure 5-5: Wind Rose of Karachi
Source: Pakistan Meteorological Department

5.1.5. Air Quality

Ambient Air Quality of Sub-Project Location:

The primary objective for conducting of 24 hours ambient air quality monitoring is to identify the existing ambient air quality of sub-project location. 24 hours ambient air quality monitoring was conducted at two different spots at the sub-project site. Average 24 hours monitoring results of Carbon Monoxide (Co), Ozone (O_3), Oxides of Nitrogen (NO), Nitrogen Dioxide (NO_2), Sulphur Dioxide (SO_2), Suspended Particulate Matter (SPM) and Lead (Pb) are complying with SEQS limits at the sub-project site. Meanwhile, Average 24 hours monitoring results of Particulate Matter-10 Microns (PM_{10}) and Particulate Matter-2.5 Microns ($PM_{2.5}$) are not complying with the SEQS Limits on the two different spots at the sub-project site. Results of 24 hours ambient air quality monitoring at sub-project site are attached at the **Annexure-K (Environmental Monitoring and Testing Reports)** of the ESMP Report.

	
Ambient air quality monitoring was conducted at the sub-project site	Ambient air quality monitoring was conducted at the sub-project site

Figure 5-6: Ambient Air Quality Monitoring at the Sub-project site

5.1.6. Noise Condition

The noise conditions are a result of the activities that occur in the sub-project area.

Noise Quality of Sub-Project Location:

The primary objective for conducting of real time noise quality monitoring is to identify the existing noise quality of sub-project location. Noise quality monitoring was conducted at two different spots at the sub-project site. Monitoring results are not complying with SEQS limits at the sampling point 1 and sample point 2 at sub-project site. Results of real time noise quality are attached in the **Annexure-K (Environmental Monitoring and Testing Reports)** of the ESMP Report.

	
Noise monitoring was conducted at the sub-project site	Noise monitoring was conducted at the sub-project site

Figure 5-7: Real Time Air Quality Monitoring at the Sub-project site

5.1.7. Water Quality

The primary objective for conducting of sampling (tap water quality and wastewater quality) is to identify the existing tap water quality and wastewater quality of sub-project location. Microbiological, Physical and Chemical parameters of Tap water testing results are complying with SSDWQ at the sub-project site and Wastewater quality testing results are complying with SEQS limits at the sub-project site.

Results of tap water quality and wastewater quality are attached in the **Annexure-K (Environmental Monitoring and Testing Reports)** of the ESMP Report.

	
Wastewater sampling was conducted at the sub-project site	Tap water sampling was conducted at the sub-project site

Figure 5-8: Real Time Air Quality Monitoring at the Sub-project site

5.1.8. Topography

Karachi is located in the south of Sindh, along the coast of the Arabian Sea.

According to physiographic features, Karachi City can be divided into three broad categories: Hilly Region (Mountain Highland), Alluvial Plain (Piedmont Plain) and Coastal Areas (Valley Floor).[7]

Maximum elevation level of Karachi is 169 m, minimum elevation level of Karachi is -2m and average elevation level of Karachi is 23m.[8]

Maximum elevation level of sub-project location is 51m and minimum elevation level of sub-project location is 34m.

Figure 5-9 and Figure 5-10 show the elevation levels of Karachi and elevation level of sub-project location respectively.

[7] https://openjicareport.jica.go.jp/pdf/11888070_04.pdf
[8] https://en-gb.topographic-map.com/maps/lpfs/Karachi/

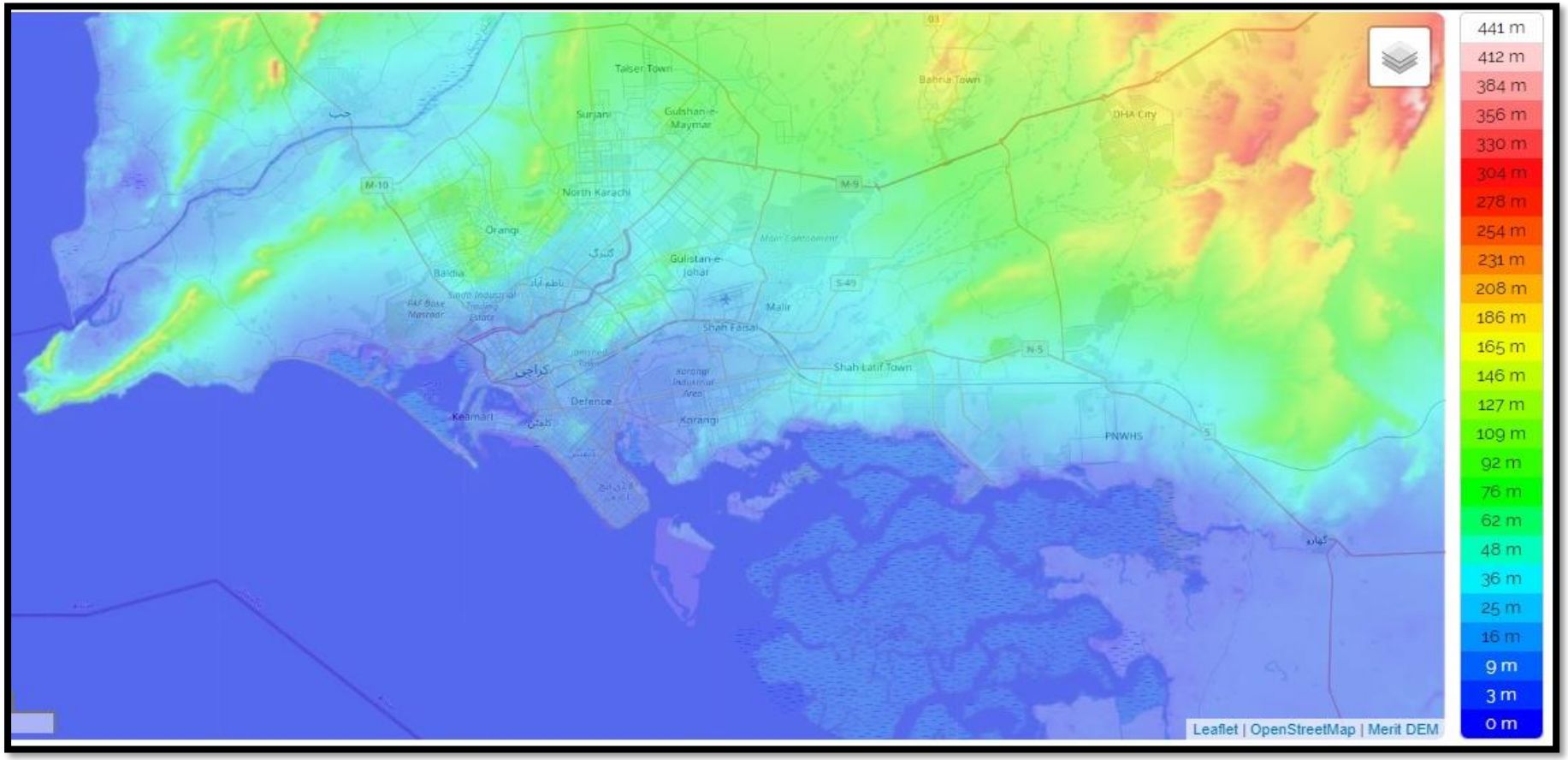


Figure 5-9: Elevation levels of Karachi.[9]

[9] https://en-gb.topographic-map.com/maps/lpfs/Karachi/

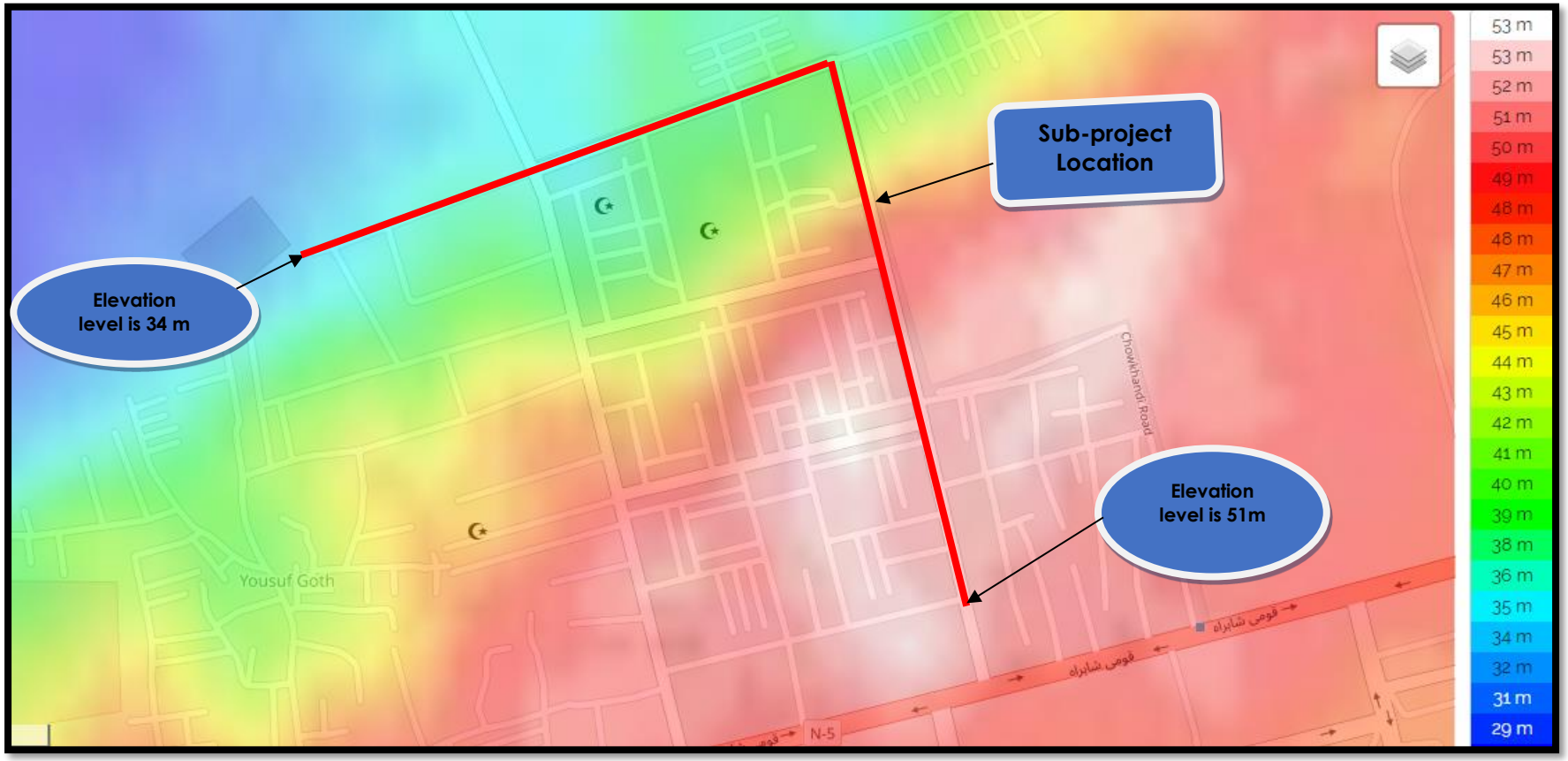


Figure 5-10: Elevation level of Sub-project location[10]

[10] https://en-gb.topographic-map.com/maps/lpfs/Karachi/

5.1.9. Soil and Geology

The soil in Karachi is generally classified in two types, where one is of the loamy sandy and gravelly soils of river valleys and alluvial cones near the coastline, and shallow loamy gravelly soil and rock outcrops plateau.[11]

Sub-project area is located in the geological formation of piedmont & sub-piedmont deposits and alluvial deposits.

Figure 5-11 and 5-12 shows the geological map of Karachi and geological map of sub-project location respectively.

Soil Investigation was carried out at the sub-project site. Results of Soil Tests are attached as **Annexure-M (Soil Testing Report)** of the ESMP Report.

[11] https://research.fit.edu/media/site-specific/researchfitedu/coast-climate-adaptation-library/asia-amp-indian-ocean/pakistan/Bakhsh-et-al.--2011.--Flooding-Inundating-Modeling-for-Malir-Watershed-of-Karachi.pdf

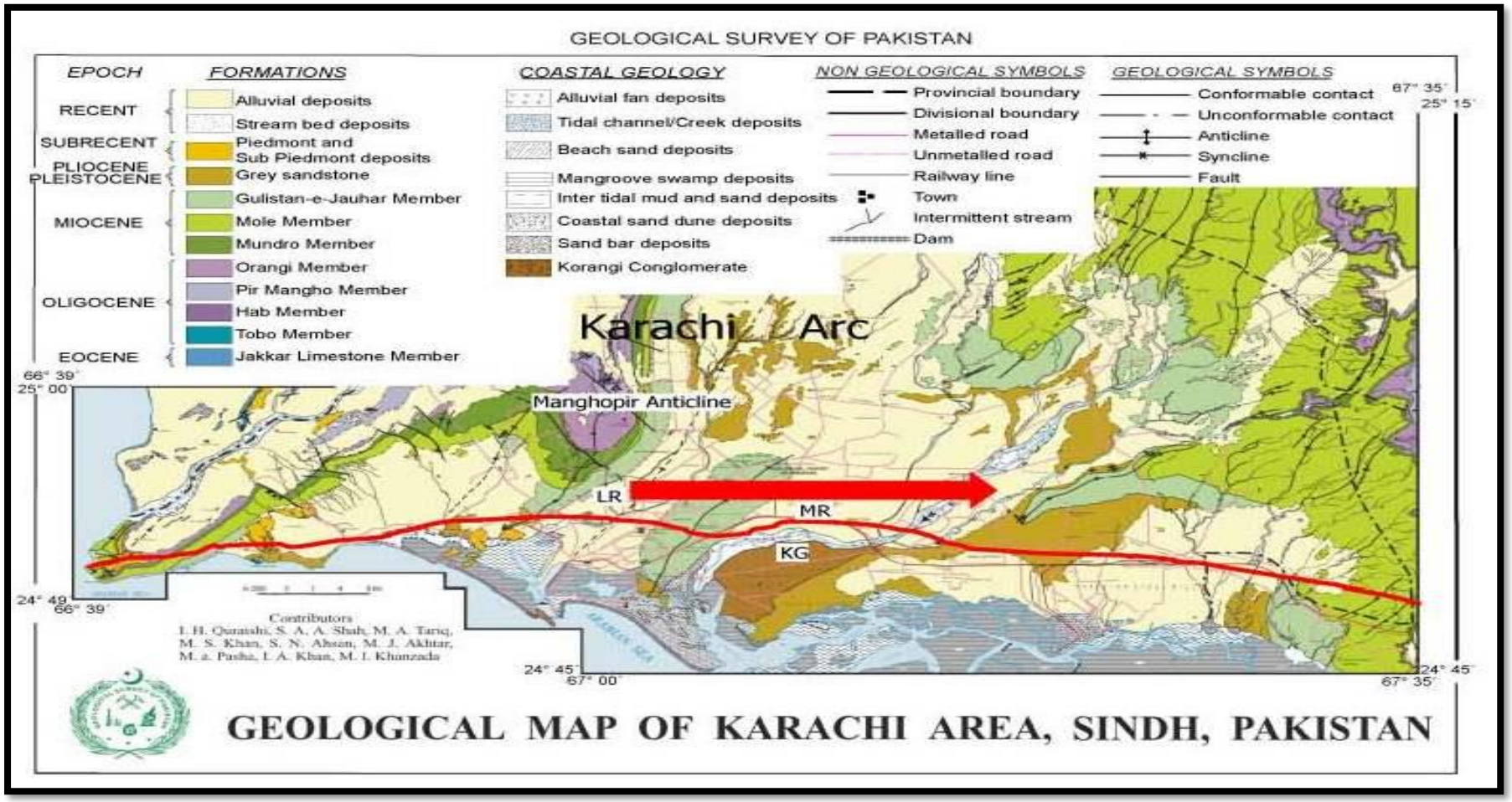


Figure 5-11: Geological Map of Karachi, Sindh, Pakistan

(Source: http://nceg.uop.edu.pk/GeologicalBulletin/Vol-46%282%29-2013/Vol-46%282%29-2013-Paper2.pdf**)**

Figure 5-12: Geological Map of Sub-project Location

5.1.10. Water Resources

Water is supplied to the sub-project location via Pipri trunk main. The map of water resources and bulk water supply system for Karachi is shown in **Figure 5-13**.

The Sub-project is located in Dawood Shoro Goth, Shah Latif Town Sector 19-B, UC-25, Razzak Abad, Bin Qasim Division, District Council of Karachi, which lies in the water supply Zone-I of the Karachi Water & Sewerage Board (KW&SB), as shown in **Figure 5-15.** Water distribution pipeline is available in the sub-project area.[12]

During the site visit, local people informed that groundwater Table lies at a depth greater than 100 ft at the sub-project area and the water is saline in nature.

[12] *Master plan study to formulate a phased development plan of water supply and sewerage system for Karachi up to the year 2025.*

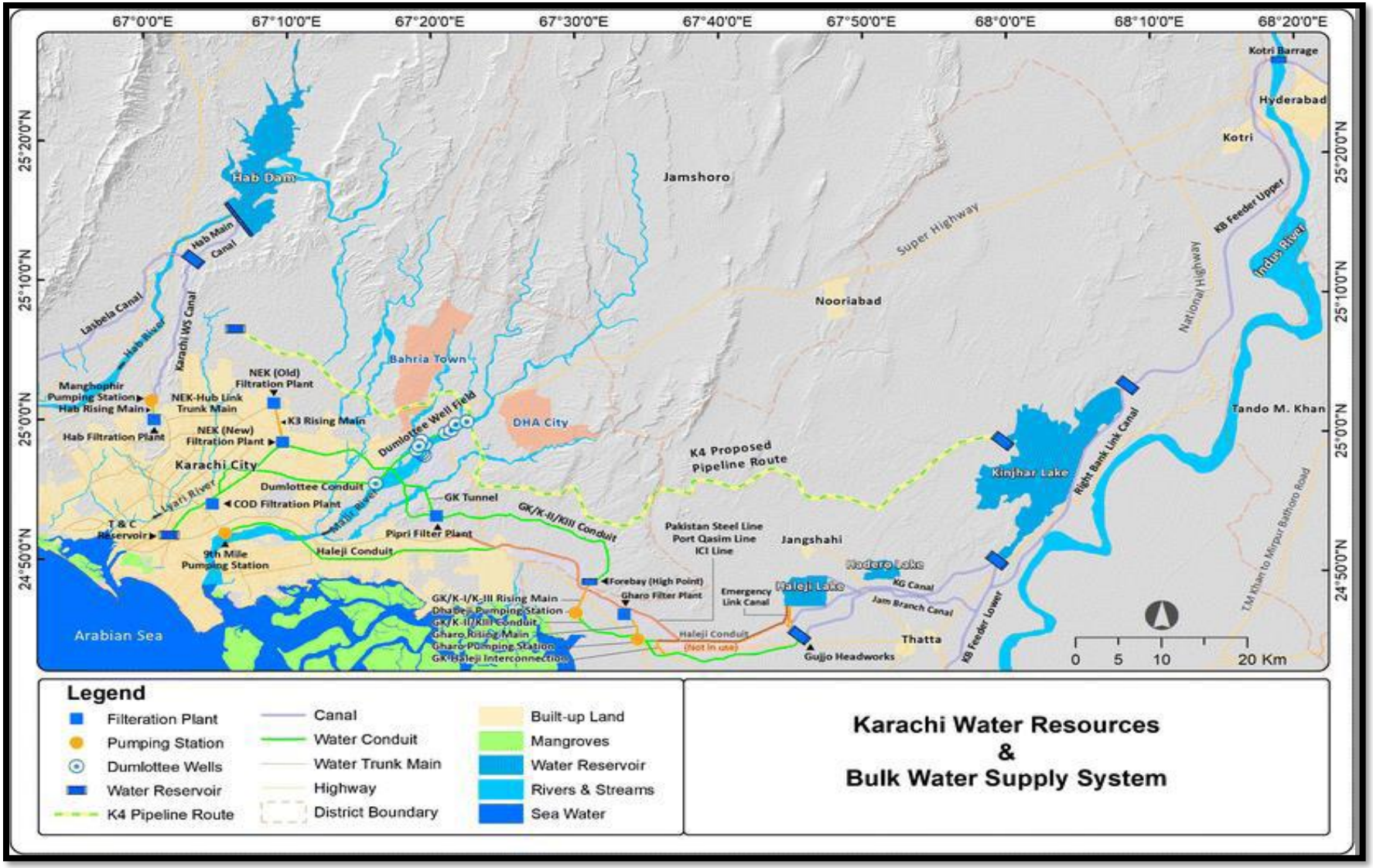


Figure 5-13: Water Resources & Bulk Water Supply System of Karachi Figure

Water is supplied to sub-project location through 48'' inch diameter Pipri Main Trunk. The route of Major Water Trunk Mains is shown below in **Figure 5-14**.

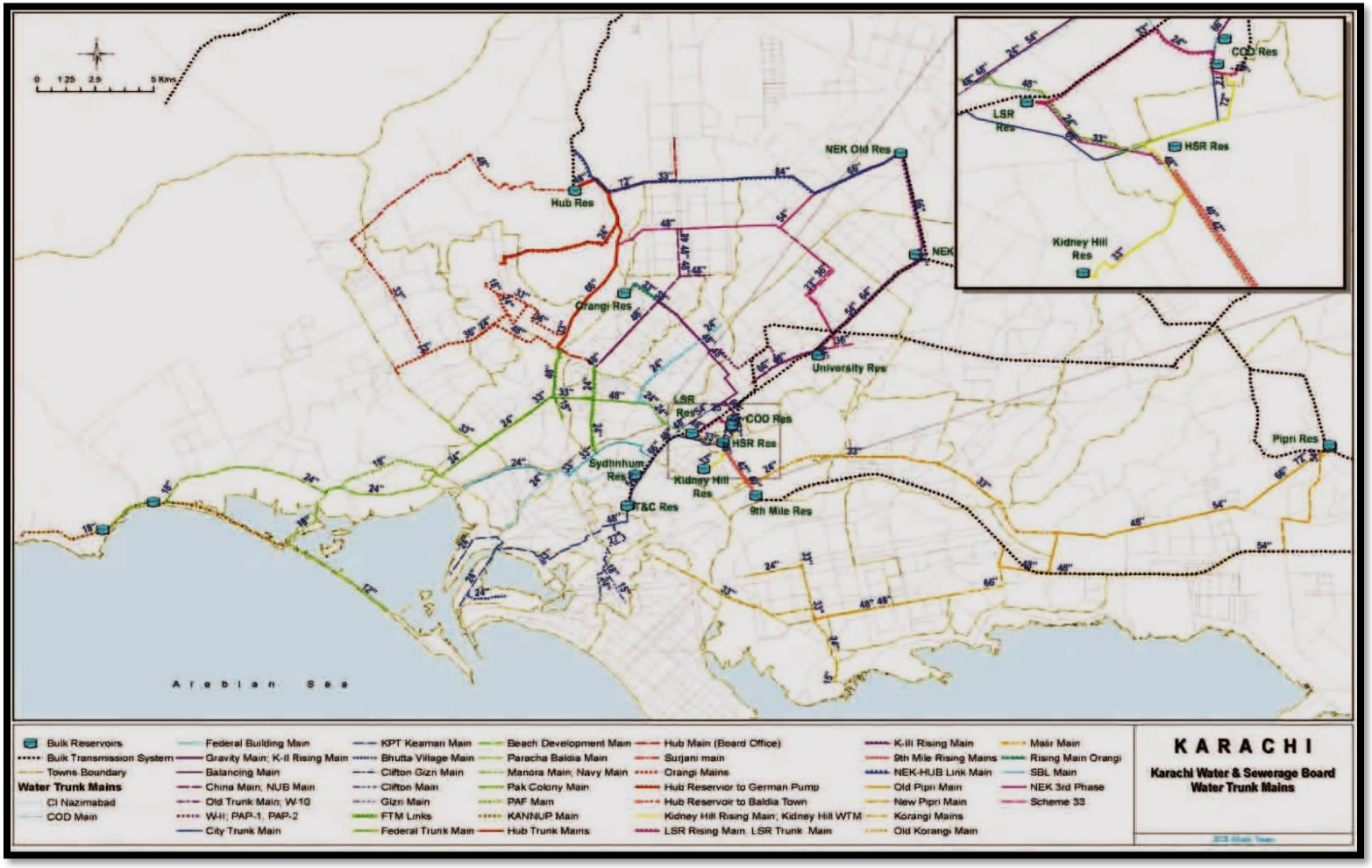


Figure 5-14: Route of Major Water Trunk Mains, Karachi

(Source: JICA Study)

The Sub-project is located in Dawood Shoro Goth, District Council of Karachi, which is lies in the water supply Zone I of the Karachi Water & Sewerage Board (KW&SB), as shown in **Figure 5-15.**

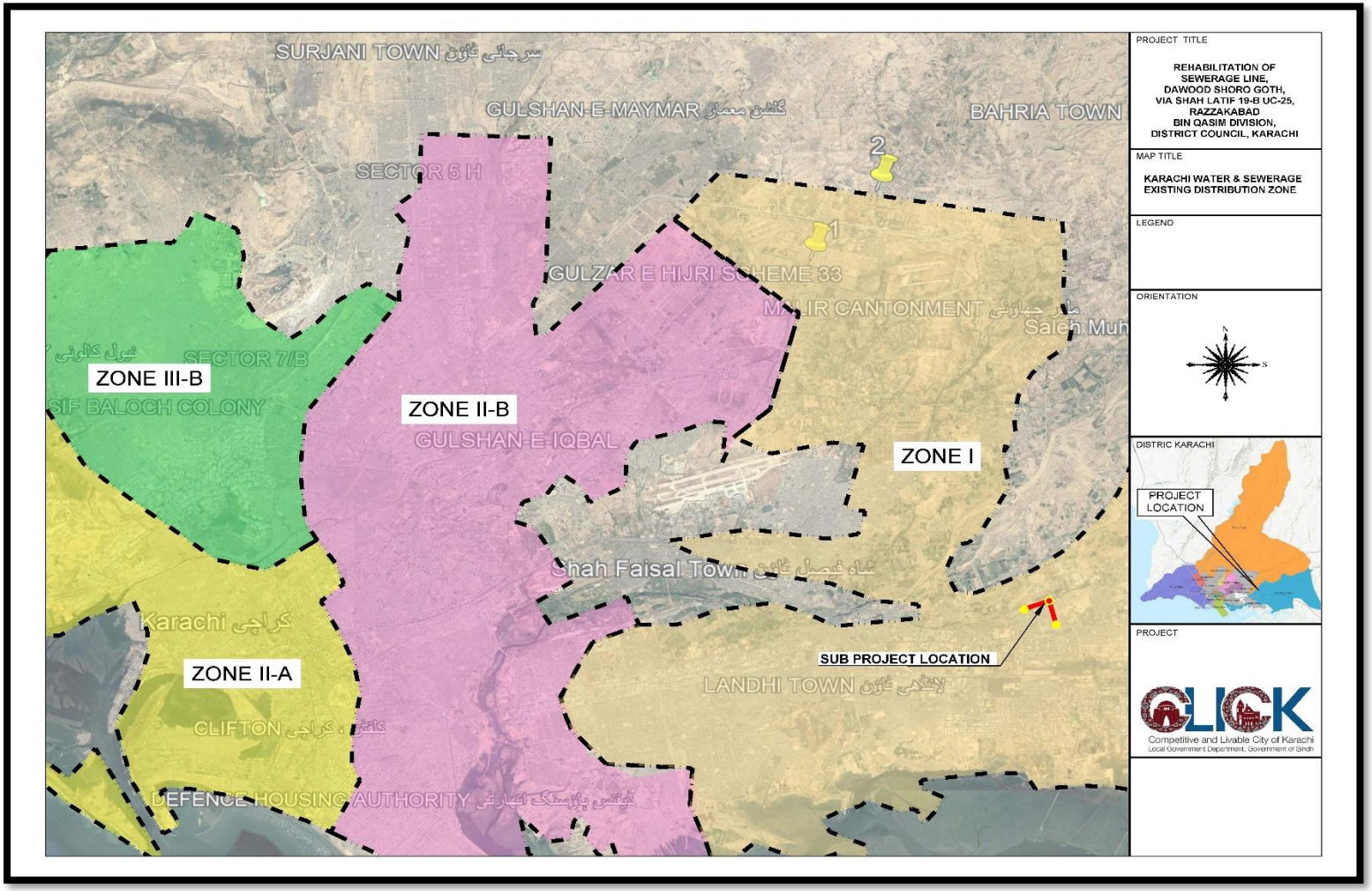


Figure 5-15: Existing Water Supply Zones in Karachi
(Source: JICA Study[13])

[13] https://openjicareport.jica.go.jp/pdf/11888070_02.pdf

5.1.11. Sewerage & Drainage System

Sewerage system along the road is badly damaged and choked. Due to which, the untreated sewage spills over from manholes and broken pipes and remains on the road causing inconvenience and health hazards for the local population and other road users.

The sewerage line issue will be addressed under the proposed sub-project. Existing condition at the sub-project location is showing in the **Figure 5-16.**

Figure 5-16: Existing condition of Sewerage system at the sub-project location

5.1.12. Seismology

Karachi is located in a moderate earthquake zone. Pakistan is divided into five seismic zones (Zones 1, 2A, 2B, 3, and 4) considering the severity of seismic hazard; zone 1 is the lowest, and zone 4 is the highest seismic zone.[14] The Sindh Building Control Authority has placed Karachi in Zone-2. Based on the actual events, past observations of fault movement and other geological activities, Karachi is situated in a region where moderate earthquakes may occur of magnitude 5.0 to 6.0 equivalents to intensity between VII and VIII on Modified Mercallis Scale (M).

Sub-project is located in Zone 2B of seismology. Seismic zoning map of Sub-project Location is showing on **Figure 5-17**. The Zone 2B has Peak Ground Acceleration (PGA) in the range of 0.16 g to 0.24 g for a return period of 475 years and is considered to be at 'Moderate' risk of a major earthquake event.[15]

[14]https://www.researchgate.net/publication/274272010_Elaboration_of_Multi-Hazard_Zoning_and_Qualitative_Risk_Maps_of_Pakistan/link/5a334554458515afb690c67d/download

[15] Environmental Management Framework of CLICK

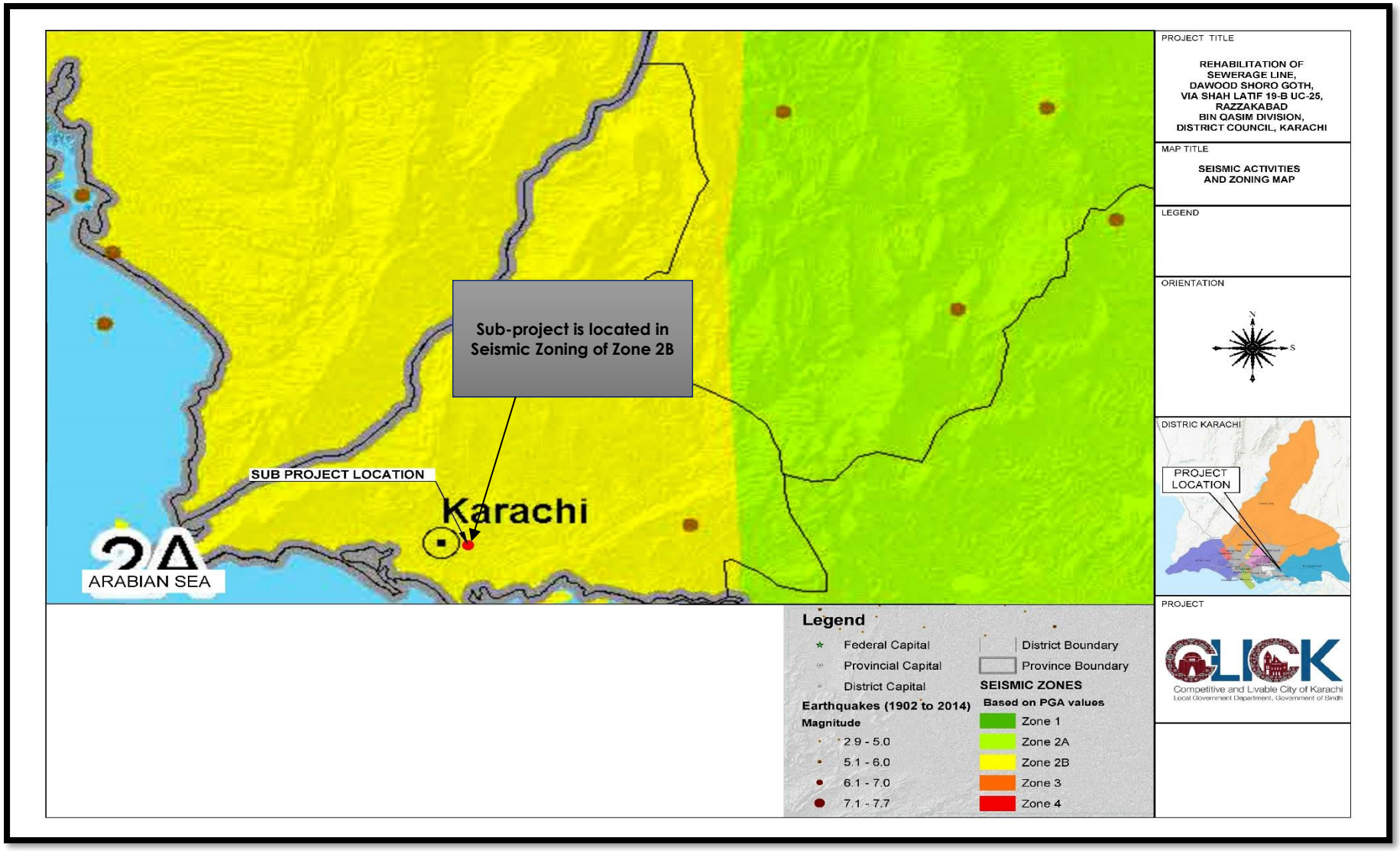


Figure 5-17: Seismic zoning map of Sub-project Location

5.1.13. Protected Sites

Any protected area of national or provincial importance was not observed and reported within the project corridor. The sub-project area is already in use of the local residents as well as general traffic. The Archaeological site of Chaukandi Tombs is located in the vicinity of sub-project site but a boundary wall separates it from the Sub-project site. Detail of the site is presented below under section 5.6: Archaeological, historical, and cultural resources.

5.2. Ecological Environment

There are no recorded wildlife sanctuaries or game reserves located near the sub-project area.

5.2.1. Flora

Sub-project area is covered with flora *species of Phoenix dactylifera, Conocarpus erectus, Azadirachta indica, Prosopis juliflora, Acacia nilotica, Syzygium cumini, Terminalia cattapa, Ficus benghalensis, Eucalyptus globules, Ficus religiosa and Calotropis procera.*

However, during the Rehabilitation work of sub-project, there is no need of tree cutting.

Sub-project species of flora are classified according to IUCN Red List, 2021, as shown in the following **Table 5-4:**

Table 5-4: Flora of Sub-project location

S. No.	Biological Name of Plant Species	Local Name of Plant Species	Description	IUCN Red List, 2021
1.	*Phoenix dactylifera*	Date Palm	Few species	LC (Global)
2.	*Conocarpus erectus*	Buttonwood	Dense species	LC (Global)
3.	*Azadirachta indica*	Neem	Few species	LC (Global)
4.	*Prosopis juliflora*	Mesquite	Scattered species	NA
5.	*Acacia nilotica*	Kikar	Scattered species	LC (Global)
6.	*Syzygium cumini*	Black Plum	Few species	LC (Global)
7.	*Terminalia cattapa*	Badam Tree	Few species	NA
8.	*Ficus benghalensis*	Banyan fig	Few species	NA
9.	*Eucalyptus globulus*	Safeda	Few species	LC (Global)
10.	*Ficus religiosa*	Peepal	Few species	NA
11.	*Calotropis procera*	Aak (milk weed)	Scattered species	NA

Note: *Flora Species classification as per IUCN Red List 2021 at Geographical Scope (Global).*
LC: *Least Concern*
NA: *This Specie is not fall into IUCN Red list category.*

	
Phoenix dactylifera (Date Palm)	*Azadirachta indica* (Neem)
	
Conocarpus erectus (Buttonwood)	*Prosopis juliflora* (Mesquite)

Figure 5-18: Pictorial View of Flora at Sub-project location

5.2.2. Fauna

During the site visit of sub-project location, following faunal species (including mammals, birds, reptiles and amphibians) were observed at the sub-project location.

Table 5-5: Fauna at the Sub-project Site

S. No.	Biological Name of Species	Local Name of Species	IUCN Red List, 2021
1.	*Acridotheres tristis*	Common Mynah	LC (Global)
2.	*Passer domesticus*	House Sparrow	LC (Global)
3.	*Corvus splendens*	House Crow	LC (Global)
4.	*Columba livia (Rock dove)*	Domestic Pigeon	NA
5.	*Gallus gallus*	Domestic Rooster	LC (Global)
6.	*Capra hircus*	Domestic Goat	NA
7.	*Felis catus*	Domestic Stray Cat	NA
8.	*Canis lupus familiaris*	Domestic Stray Dog	NA
9.	*Equus asinus*	Domestic Donkey	NA
Note: *Fauna Species classification as per IUCN Red List 2021 at Geographical Scope (Global).* ***LC:*** *Least Concern* ***NA:*** *This Specie is not fall into IUCN Red list, 2021 category.*			

Reptiles

Common house gecko *(Hemidactylus frenatus)* lizard was observed commonly in the sub-project area.

Table 5-6: Reptiles at the Sub-project Site

S. No.	Biological Name of Species	Local Name of Species	IUCN Red List, 2021
1.	*Hemidactylus frenatus*	Common house gecko	LC (Global)
Note: *Fauna Species classification as per IUCN Red List 2021 at Geographical Scope (Global).* ***LC:*** *Least Concern*			

Amphibians

Common Asian Toad *(Bufo melanostictus)* frog was observed in the sub-project area.

Table 5-7: Amphibians at the Sub-project Site

S. No.	Biological Name of Species	Local Name of Species	IUCN Red List, 2021
1.	*Bufo melanostictus*	Common Asian Toad	LC (Global)
Note: *Fauna Species classification as per IUCN Red List 2021 at Geographical Scope (Global).* ***LC:*** *Least Concern*			

	
Capra hircus (Domestic Goat)	*Corvus splendens* (House Crow)

Figure 5-19: Pictorial View of Fauna at Sub-project location

5.3. Socio-Economic Overview

The socio-economic profile of the subproject area is described in this section of the report. It is based on literature review, site visits and consultations with key stakeholder groups. It includes an overview of the socio-economic conditions of the people, who live and work in the area, social service providers (education and healthcare facilities) and transport service providers. Moreover, the existing conditions of utilities and the presence of cultural/religious sites are also discussed.

5.3.1. Socio-Economic features

The residents of the sub-project area fall under the lower income category, mostly are engaged in private jobs at the nearby Landhi and Port Qasim industrial areas, in teaching jobs, commercial activities, restaurants, furniture shops, general stores and vegetable & fruit shops in the locality. Women residents moslty do not have opportunities to work from home.

5.3.2. Demographic Characteristics'

Karachi is one of the most populous cities in Pakistan, having a population of 16.1 million as recorded in 2017. The sub-project lies in the rural area of Karachi where the local population of Bin Qasim Sub-division resides.

5.3.3. Population

Population of Bin Qasim Sub-division is detailed below in the **Table 5-8**.

Table 5-8: Population Characteristics of Bin Qasim Sub-division, Karachi (2017)

Admin-Unit	Area (Sq. Km.)	POPULATION - 2017								
		All Sexes	Male	Female	Transgender	Sex Ratio	Population Density Per Sq. Km.	Urban Proportion	Average Household Size	1998-2017 Average Annual Growth Rate (%)
Bin Qasim Sub-Division	**447**	**248,098**	**132,391**	**115,668**	**39**	**114.46**	**555.03**	**-**	**5.92**	**4.46**
Rural		**248,098**	**132,391**	**115,668**	**39**	**114.46**	**555.03**	**-**	**5.92**	**4.46**
Urban		-	-	-	-	-	-	-	-	-

Source: Population Census Report – 2017, Federal Bureau of Statistics (https://www.pbs.gov.pk/sites/default/files//population_census/results/09701.pdf)

5.3.4. Ethnic, religious and Linguistic Diversity

The residents of sub project area mostly pertains to lower middle-class, majority are Urdu Speaking, followed by Punjabi, Sindhi, Pashto and Balochi. Religiously are Muslim.

5.3.5. Health

Labbaik Medical Centre and Maternity Home is present in the vicinity of sub-project location. Meanwhile private clinics are also present in nearby vicinity of sub-project. Malaria, typhoid and skin diseases are the most common health problems of the area.

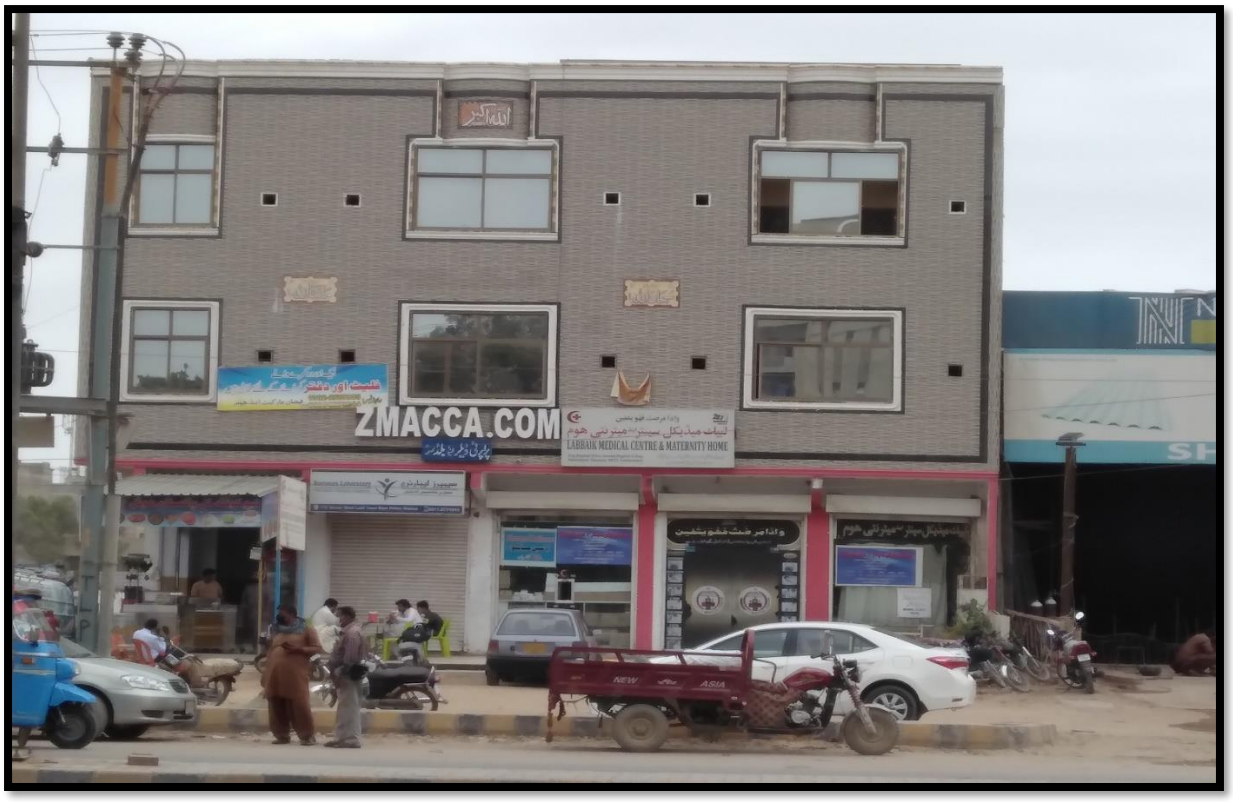


Figure 5-20: Labbaik Medical Centre and Maternity Home at Sub-project location

5.3.6. Education

Communities living in and around of the subproject area reported that better quality and adequate educational facilities for both boys and girls are available. Government and private schools and Fast National University are present in the vicinity of sub-project location.

Fast National University is located in the vicinity of Sub-project location

Ujala Public School is located in the vicinity of Sub-project location

Figure 5-21: Fast National University and Ujala Public School Institute at Sub-project location

5.3.7. Housing

Majority of the houses are made of substantial material such as concreted and cemented blocks in the sub-project area. Basic utilities, which include gas, water supply and sewerage system, are also available at the sub-project site.

5.3.8. Recreational facilities

The only recreational facility available in the subproject area is Gulzar Sherazi Family Park.

5.3.9. Employment

Majority of the employment in the area comes through private job & industrial job at nearby Landhi and Port Qasim industrial zone, where they use this employment as a major source of income. Other employment sources in the sub-project area come from residents running and managing shops, small hotels, restaurants, furniture shops, general stores, vegetable and fruit shops.

5.3.10. Public transport

Residents travel by using motor cycles, cars, auto rickshaws and buses for their routine work.

5.4. Affected Structures and Settlements

During the initial visit of the sub-project site, only Four PAPs (temporary kiosks) were identified along the sub-project location including small temporary kiosks for selling Vegetables, ice and chicken as shown in the pictures below. Detailed Report is being prepared and will be shared as a separate document.

No residential structures and residential settlements in the vicinity will be affected. Therefore, no residential structure are required to be relocated and no agriculture or productive assets existing in the sub-project area will be affected.


PAPs at the sub-project site

PAPs at the sub-project site

Figure 5-22: Four PAPs (temporary hawkers) at the sub-project site

5.5. Industrial and Commercial Activities

Landhi and Port Qasim Industrial zone is present in the vicinity of sub-project site. Commercial activities are also carried out in the sub-project area.

5.6. Archaeological, Historical, and Cultural Resources

Although archaeological site of Chaukandi Tombs is located in the vicinity of the sub-project site, the historical Tombs are about 2000ft (0.64km) away from the proposed rehabilitation works. There is a boundary wall on the outer periphery of the archaeological site physically separating it from the Sub-project site by another 75ft distance.

During the assessment of the sub-project, feedback from community and security staff at the Chaukandi Tombs was noted. They mentioned that existing sewerage and sanitation condition of the sub-project area is very poor. Mostly manholes are open and the existing sewerage lines are choked and damaged. The sewage flows on the existing road creating health hazards for the local population and the visitors to the site. Therefore the sub-project will help resolve these sewerage issues of the area. As the sub-project is located outside the boundary wall of Archaeological site of Chaukandi Tombs, it will not have any adverse impact on the archeological site.

There were no identified archaeological, historical, and cultural resources within the sub-project's RoW. The sub-project area is already in use of the local residents as well as general traffic. However; Chance Find procedures will be applied in case of any finding. Contractor has to follow Chance Find Procedure as provided at Annex (E) in the ESMP.

Sub-project is located at a safe distance from the Boundary wall of the Archaeological site

Inside location of Boundary wall (Archaeological site)

Community feedback on the sub-project

Feedback from Security Guard of Archaeological site on the sub-project

Archaeological site in the vicinity of sub-project site

Archaeological site in the vicinity of sub-project site

Figure 5-23: Archaeological site of Chaukandi Tombs in the vicinity of Sub-project location

Figure 5-24: Sub-project Location and Archaeological Site of Chaukandi Tombs with their Respective Distance

Chapter 6. STAKEHOLDER CONSULTATIONS

6.1. Methodology for the Social Screening and Categorization

Meaningful stakeholder consultation is widely recognized as an essential precursor for managing the perceived socio-economic risks of a development project and enhancing social sustainability. The stakeholder's engagement and consultations were carried out at the project conceptualization phase and at the time of preparation of this ESMP, by following the methodological steps, guidelines and procedures for social screening defined in Social Management Framework (SMF) of CLICK. The purpose and methodology for the social screening process is aimed at determining the result significant negative social effects.

The consultative workshops were conducted by adopting the COVID-19 Standard Operating Procedures of the GoS. The first consultative meeting was conducted at the sub-project location on 29th May, 2021 with limited local residents and business community of area as part of the environmental and social screening study. Another round of Primary and Secondary Consultation Meeting were held on 12th November, 2021 and 11th November, 2021 respectively for preparation of this ESMP. The outcome of the consultations and the points highlighted were incorporated in the sub-project features.

Information dissemination was ensured prior to the public engagement of the proposed project. For the registration of complaints, the telephone number and address of the District Council was provided to the locals.

6.2. Social Screening Process and procedures

The purpose and methodology of the screening process is aimed to determine activities that are likely to result in significant negative social impacts, with a view to determine appropriate impact mitigation measures to ensure sustainability of the sub-project. The outcome of the screening process will determine the social impact, prior to making a decision for carrying out the activities related to construction and rehabilitation work.

6.3. Public Consultations and Disclosure

Public consultations are pre-requisite for each sub-project to fulfill the environmental and social framework requirements. The primary purpose of the consultations is to apprise the community and other stakeholders about the sub-project and record their comments, suggestion and address their reservations.

6.4. Consultation Objectives

Stakeholders' consultation is an integral component of the ESMP. It is a process that involves the various stakeholders of a project especially the residents of the vicinity to inform the project dynamics and record their concerns or suggestions. The overall objectives of the consultation process are as follows:

- Build trust and promote collaboration between the community and District Council;
- Provide information regarding the project and its potential impacts on the area and the stakeholders
- Manage expectations and streamline misconceptions;
- Ensure participation and acceptance of the project by the stakeholders; and
- Ensure the participation of marginalized and excluded groups.

6.5. Stakeholders Identification and Analysis

Stakeholders include individuals, groups, or institutions that may be affected by and can significantly influence the project activities, or are integral to the achievement of the objectives of a project. Stakeholders for the proposed Sub-projects are divided into two broad categories; primary and secondary stakeholders. Concerns and input from both primary and secondary stakeholders are important to identify the issues arising from the execution of the

sub-project and propose mitigation measures that minimize the negative project impacts identified.

Primary stakeholders are those who have a direct staked in the sub-project, which includes residents, commercial entities and institutions residing in the sub-project area. Primary stakeholders of the proposed sub-project mainly comprise the people living in its close vicinity of sub-project.

Secondary stakeholders include the relevant government agencies and public interest groups which may indirectly influence or be influenced by the sub-project. Important stakeholders include as K-Electric (K.E.), Karachi Water and Sewerage Board (KW&SB), Sui Southern Gas Co. Ltd. (SSGC), Malir Development Authority (MDA), Pakistan Telecommunication Ltd. (PTCL), Traffic Police, Coast Guard, Cultural & Heritage Department and Sindh Environmental Protection Agency (SEPA).

6.6. Primary Stakeholders' Consultations

Following consultations were conducted with primary stakeholders.

Table 6-1: Consultation sessions

Date	Location	Stakeholder
29th May, 2021	At Sub-project Location	Community was consulted by District Council, PIU and Consultant Team. Attendance sheet is annexed at Annexure C
12th November, 2021	At Sub-project Location (Near Kahirpuri Masjid-Chowkandi Graveyard)	Male & female Residents were consulted by District Council, PIU and Consultant team. Attendance Sheet is annexed at Annexure C

The consultation meeting progressed in the following manner:

- An overview of the Project, Sub-project and screening process was provided to the community representatives in the local language.
- Participants were given the opportunity to raise queries or concerns regarding the Sub-project.
- The queries were responded to and concerns were documented.

The following information was shared with the local community:

- Sub-project's selection methodology, importance, funding source and, its implementation/execution methodology;
- Benefits from the proposed sub-project;
- Informed of the construction activity that may cause any type of health hazard and their mitigation measures;
- Information related to environment and social policy/safeguards of World Bank
- Expected loss of land/structure/ business or other community property due to construction activity and its compensation;
- Informing mitigation of any risk to historic or cultural monuments due to the sub-project's on-site implementation;
- Possible types of problems faced by the locals in their daily activities due to construction work and measures; and
- The inflow of labor during the construction stage of the sub-project.

Feedback that was obtained from the stakeholders was documented, and all issues and suggestions raised were recorded. Some common concerns raised by the stakeholders were regarding the project timeline and minimal employment opportunities in the sub-project area.

The main issues and concerns raised from the community representatives of the area and the PIU/District Council Response is summarized in **Table 6.2** Hereunder, and the list of participants during these consultations are also recorded at **Annex: C**

Table 6-2: Key Community Stakeholder Concerns and Response

Local Male Residents were consulted by District Council and consultant team on 29th May 2021 at Sub-project Location		
S. No.	**Stakeholder Feedback**	**PIU/District Council Response**
1.	The local residents residing in the sub-project area showed great concern about the sewerage. They claimed that the bad condition of the sewerage lines and drainage system has restrained access to many parts of the area because of the constant flooding of sewage water.	District Council acknowledge the concerns of the area and added that, the sub-project is a high priority of CLICK team, and will be completed to facilitate the locals of the area.
2.	The locals complained about the major safety issues that are created because of the open manholes in the area, which often leads to children falling and slipping in the manholes.	Acknowledged, and District Council will ensure that the manhole covers are provided adequately that will mitigate and prevent any safety hazards related to the opening of manholes.
3.	The residents were concerned about the timeline and completion of the project because of its pressing need and urgency in the area. Currently, the presence of sewage water flooded on the roads has the potential to create insanitary conditions and the presence of many diseases such as malaria.	The project team responded that after the necessary approvals the project would be a priority and will be conducted in an expeditious manner.
4.	Residents also raised issues regarding rain floods due to the existing poor condition along the road, where the stormwater always piles up along the road during the rainy season.	The District council representative briefed that the drain issues will be resolved with the development of the proposed sub-project.
5.	Community asked whether any permanent structure demolition will occur due to rehabilitation work.	PIU informed that as per the proposed design, no permanent structure will be demolished.
6.	Local residents also complained about the entering of sewerage line water into houses, especially in houses that are at a lower level.	The project team briefed that new sewerage line design will ensure that the new drainage system has a high-quality design and structural integrity to ensure that the nearby households are not affected by the sewage water. The safety and sanitary conditions are noted and a priority of the sub-project.

Male & Female Residents were consulted at Sub-project Location (Near Kahirpuri Masjid-Chowkandi Graveyard) by District Council, PIU and Consultant Team on 12th November, 2021.		
S. No.	**Stakeholder Feedback**	**PIU/District Council Response**
1.	Sewerage and drainage condition is not good in this area.	It will be addressed accordingly via proposed sub-project.
2.	Sanitation condition is not good in this area. Solid waste container should be placed at the random spots in this area.	It will be addressed accordingly. Community should not dump the solid waste material in the manholes.
3.	What is the duration of sub-project work?	This sub-project is for the rehabilitation of existing sewerage line. Tentative time duration of the sub-project is 03 months.
4.	Is the provision of road rehabilitation work include in this sub-project?	This sub-project is only for the rehabilitation of existing sewerage line.
5.	Mostly manhole are not covers in this area.	Acknowledged, and District Council really understand the issue. Rehabilitation of sub-project will be addressed this issue.
6.	Children are facing the problem while going to school due to improper drainage system and bad condition of street in the area	Acknowledged, and District Council really understand the issue. Drainage issue will be addressed accordingly.

During the consultation process about the proposed sub-project, people expressed keen interest in the proposed sub-project. People, in general, were very enthusiastic about the benefits of the sub-project for the residents. People pledged to extend all types of support during the execution of the sub-project as their major difficulties would be addressed after completion of the sub-project.

Figure 6-1: Photographs showing Stakeholders' Consultation

Community Consultation # 01: Community Consultation Meeting at Sub-project Site.

Community consultation at Sub-project Area

The residents discussing the risks of open manholes along the sub-project route

Insanitary condition at Sub-project Area

Consultation with the local residents at the Sub-project site

Taking the feedbacks from the Community on the Sub-project

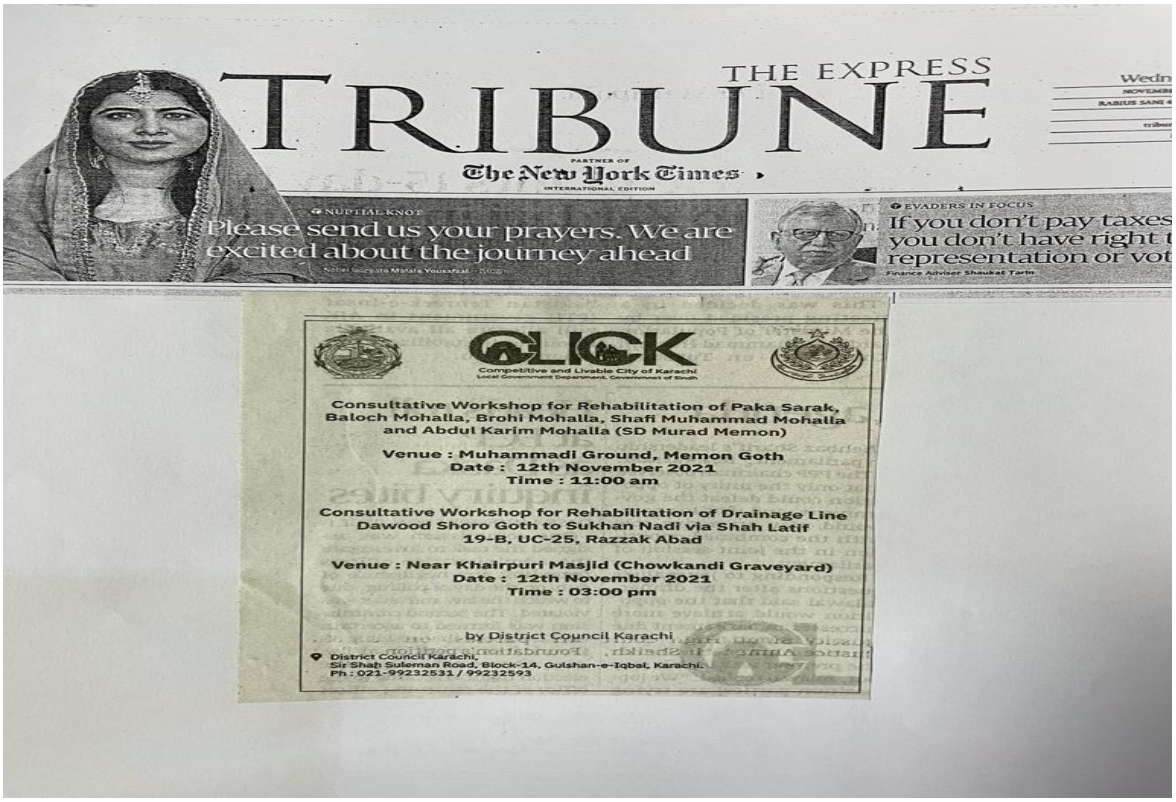
Taking feedback from the Community on the Sub-project

Figure 6-2: Community Consultation meeting at Sub-project Location

Community Consultation # 02: Community consultation meeting at Sub-project Location.

Banner is showing workshop details in English language.

Banner is showing workshop details in local Urdu language.



Advertisment in the local newspaper for the Community Consultation Meeting by District Council

Advertisment in the local newspaper for the Community Consultation Meeting by District Council

District Council representative is briefing about the Sub-Project

Consultant's representative is briefing about the Sub-Project

Community participation in the consultation workshop

Community participation in the consultation workshop

Community feedback on the Sub-project

Community feedback on the Sub-project

Community feedback on the Sub-project

Community feedback on the Sub-project

Community feedback on the Sub-project

Community feedback on the Sub-project

6.7. Secondary Stakeholders Consultations

Following consultations were conducted with secondary stakeholders.

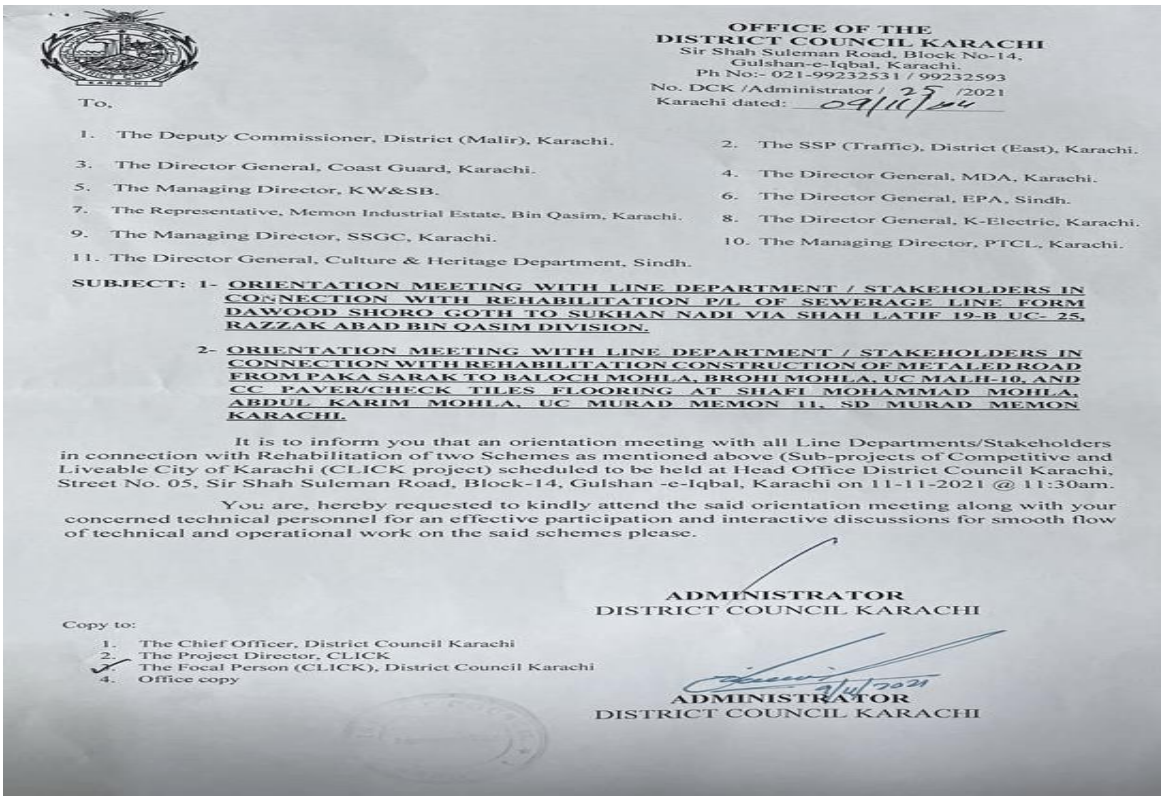
Time & Date	Location	Stakeholder
11:30 a.m., 11th November, 2021.	**District Council Office, Karachi**	Govt. line department Attendance is annexed (C)

Following are the details of consultative meetings

Consultative Meeting of Stakeholders "Rehabilitation of Existing Sewerage Line from Dawood Shoro Goth to Sukhan Nadi, via Shah Latif Town, Sector 19-B, UC-25, Karachi."			
DATE & TIME: 11th November, 2021. 11:30 a.m.			
LOCATION: District Council office, Sir Shah Suleman Road, Block-14, Gulshan-e- Iqbal, Karachi.			
OBJECTIVE: Project Brief and Consultative Meeting with Stakeholders			
S. No.	**Stakeholder**	**Stakeholder concerns**	**PIU/District Council /Consultant Response**
1.	Sindh Environmental Protection Agency (SEPA)	Water Sprinkling should be carried out at the sub-project site. This is very good initiative by the World bank, CLICK team and District Council.	Water sprinkling will be carried out during the construction phase of sub-project.
2.	Pakistan Telecommunication Company Ltd. (PTCL)	Proposed design and Layout Plans should be share with us. Proposed sub-project is for the betterment of society. It is highly appreciated the efforts by CLICK and District Council.	Acknowledged. Proposed design and Layout Plans will be shared with the PTCL.
3.	Karachi Water & Sewerage Board (KW&SB)	Proposed design and Layout Plans should be share with us. Proposed sub-project is for the betterment of society. It is highly appreciated the efforts by CLICK and District Council.	Acknowledged. Proposed design and Layout Plans will be shared with the KW&SB.
4.	Pakistan Coast Guard	This area is not in the jurisdiction of Pakistan Coast Guard. Proposed sub-project is for the betterment of society. It is highly appreciated the efforts by CLICK and District Council.	Acknowledged.

Figure 6-3: Stakeholder consultation meeting at District Council Office

Consultative Meeting with line Departments and Secondary Stakeholders at District Council Office, Karachi



OFFICE OF THE
DISTRICT COUNCIL KARACHI
Sir Shah Suleman Road, Block No-14,
Gulshan-e-Iqbal, Karachi.
Ph No:- 021-99232531 / 99232593
No. DCK /Administrator / 25 /2021
Karachi dated: 04/11/2021

To,

1. The Deputy Commissioner, District (Malir), Karachi.
2. The SSP (Traffic), District (East), Karachi.
3. The Director General, Coast Guard, Karachi.
4. The Director General, MDA, Karachi.
5. The Managing Director, KW&SB.
6. The Director General, EPA, Sindh.
7. The Representative, Memon Industrial Estate, Bin Qasim, Karachi.
8. The Director General, K-Electric, Karachi.
9. The Managing Director, SSGC, Karachi.
10. The Managing Director, PTCL, Karachi.
11. The Director General, Culture & Heritage Department, Sindh.

SUBJECT: 1- ORIENTATION MEETING WITH LINE DEPARTMENT / STAKEHOLDERS IN CONNECTION WITH REHABILITATION P/L OF SEWERAGE LINE FORM DAWOOD SHORO GOTH TO SUKHAN NADI VIA SHAH LATIF 19-B UC- 25, RAZZAK ABAD BIN QASIM DIVISION.

2- ORIENTATION MEETING WITH LINE DEPARTMENT / STAKEHOLDERS IN CONNECTION WITH REHABILITATION CONSTRUCTION OF METALED ROAD FROM PAKA SARAK TO BALOCH MOHLA, BROHI MOHLA, UC MALH-10, AND CC PAVER/CHECK TILES FLOORING AT SHAFI MOHAMMAD MOHLA, ABDUL KARIM MOHLA, UC MURAD MEMON 11, SD MURAD MEMON KARACHI.

It is to inform you that an orientation meeting with all Line Departments/Stakeholders in connection with Rehabilitation of two Schemes as mentioned above (Sub-projects of Competitive and Liveable City of Karachi (CLICK project) scheduled to be held at Head Office District Council Karachi, Street No. 05, Sir Shah Suleman Road, Block-14, Gulshan -e-Iqbal, Karachi on 11-11-2021 @ 11:30am.

You are, hereby requested to kindly attend the said orientation meeting along with your concerned technical personnel for an effective participation and interactive discussions for smooth flow of technical and operational work on the said schemes please.

ADMINISTRATOR
DISTRICT COUNCIL KARACHI

Copy to:
1. The Chief Officer, District Council Karachi
2. The Project Director, CLICK
3. The Focal Person (CLICK), District Council Karachi
4. Office copy

ADMINISTRATOR
DISTRICT COUNCIL KARACHI

Invitation Letter to Secondary Satkeholders/Line Departments

Competitive and Livable City of Karachi
Local Government Department, Government of Sindh

Consultative Meeting with Utility Service Providers & Line Department for Rehabilitation of Paka Sarak, Baloch Mohalla, Brohi Mohalla, Shafi Muhammad Mohalla and Abdul Karim Mohalla (SD Murad Memon)
&
Drainage Line Dawood Shoro Goth to Sukhan Nadi via Shah Latif 19-B, UC-25, Razzak Abad

Venue : District Council Karachi Office
Date : 11th November 2021
Time : 11:30 am

by District Council Karachi

District Council Karachi,
Sir Shah Suleman Road, Block-14, Gulshan-e-Iqbal, Karachi.
Ph : 021-99232531 / 99232593

Banner of Secondary Satkeholders/Line Departments

District Council representative is briefing about the Project to line departments

District Council representative is briefing about the Project to line departments

Consultant is briefing about the Project

Consultant is briefing about the Project

PIU Social Safeguard Specialist is briefing about the Social Policies of the World Bank to line departments

Line departments are giving their feedback on the Sub-project

6.8. Consultative Meetings' Outcome

The consultative meetings' outcome documents the issues and concerns that the primary and secondary stakeholders raised with regard to the sub-project's construction.

The local residents were appreciative of the efforts by District Council that this project will be undertaken because they felt a need for this sub-project especially because the proposed sewerage line was in a deteriorated state. Regarding the disruption due to construction activities, it was communicated that there may be some short-term inconvenience to the local residents, but it will be for a very short period if compared with its long-term benefits to the community. Residents will be informed prior to the commencement of the project.

Chapter 7. IMPACTS AND MITIGATION MEASURES

The impacts associated with the proposed sub-project activities are impacts of dust emissions, water/groundwater contamination, soil contamination, solid waste management, noise pollution, traffic management, occupational and community risks with regards to health and safety and restriction of access for commuters including residents and businesses.

7.1. Social Impacts

7.1.1. Impacts on Businesses/Livelihoods

During the rehabilitation works proposed in the Sub-project, livelihood of only four PAPs may be affected. The following mitigation measures will be adopted to reduce the adverse impacts on their livelihoods:

Mitigation Measures

- The four PAPs personal details and contact phone number has been noted.
- They will be helped in relocating their temporary kiosks to a safer place in the vicinity of their present location so that they do not lose any business and there is no adverse impact on their daily earnings.
- A detailed Report will be prepared and submitted to the PIU in this regard.

7.1.2. Labor Living and Working Conditions

- Labor condition or rights related issues are anticipated at minor scale such as working hours, leaves, benefits, wages, and other related facilities like provision of food, hygiene, clean water, transportation and provision of first aid. However, issues regarding labor living and working conditions will be managed according to the governing labor laws and environmental, health and safety (EH&S) regulations.

Mitigation Measures

- The worker's Grievance Redress Mechanism must be developed and communicated among the workers to lodge complaints.
- Workers should be provided with clean drinking water and hygienic food and safe & healthy environment to work and live.
- Monthly testing of drinking worker quality will be carried out at the sub-project site.
- Adequate personnel protection equipment must be provided to workers.
- Frequently water sprinkling must be carried out at the sub-project site.
- Gas cylinder will be stored in a designated shed having roof top to protect from direct sunlight. Do not expose gas cylinders to temperatures above 45 ^{0}C. Overheating of cylinders can result in buildup of pressure and explosion.
- Do not store gas cylinder with other combustible materials. Flammable substances, such as oil and other solvents, must not be stored in the same area. The storage area will be well ventilated.
- Keep gas cylinder away from any source of heat and ignition.
- Project workers will be provided with information and documentation that is clear and understandable regarding their terms and conditions of employment.
- Project workers will be paid on a regular basis as required by national law and labor management procedures such as Sindh Minimum Wages Act and Sindh Payment of Wages Act 2015.
- Workers should sign a code of conduct.
- Where required by national law or the labor management procedures, project workers will receive written notice of termination of employment and details of severance payments in a timely manner.
- A child under the minimum age established in accordance with Employment of Child
- Act (1991) and no child will be employed or engaged in connection with the project.

7.1.3. Impacts on Traffic

- A small number of vehicles are required for construction activities, which may cause minimal traffic congestion. In addition, a traffic management plan is part of the ESMP to be implemented by contractor (refer to Annex D).

Mitigation Measures

- Only drivers with a valid license and car registration documents will be allowed to drive the vehicles.
- The drivers will be trained to strictly adhere to local traffic laws.
- Traffic control devices for construction zone will be effectively used.
- At all times, the contractor will ensure safe and convenient passage for vehicles, pedestrians and livestock, and will not cause any hurdle for commuters and ensure proper access management for the local community.

7.1.4. Damage to Cultural Heritage

- As stated in the above sections, archaeological site of Chaukandi Tombs is located in the vicinity of sub-project site at a distance of about 2000ft (0.64km). It will not have any adverse impact due to the proposed rehabilitation work of the sewerage line.

  Apart from the above archaeological site, there were no identified historical and cultural resources within the sub-project's RoW. The sub-project area is already in use of the local residents as well as general traffic. The construction activities will not cause any damage to cultural heritage.

Mitigation Measures

- The contractors' workers will be sensitized and fully informed about the importance of the Archaeological site before the commencement of the work.
- The Right of way for the proposed sub-project site will be properly barricaded all along the corridor to limit the construction activities therein.
- The contractor will ensure that all operators of heavy machine and equipment will be properly trained and certified.
- Vehicular traffic and machinery will not be allowed to operate at night time.
- Risk assessment will be carried out by contractor prior to civil work.
- Noisy machines and vehicles will not be allowed to be used at the sub-project site, only properly tuned-up machines and vehicles will be allowed.
- Water will be sprinkled along the vehicular and machinery movement routes to avoid dust spreading.
- The Contractors would be trained to address privacy issues and behave ethically.
- The contractor's staff would be trained to respect the local norms.
- The Contractors would be required to follow Chance Find Procedure as given at **Annex (E)** in the ESMP.

7.1.5. Community Health and Safety (CHS) Issues

During rehabilitation of the Sub-project, there may be some adverse impacts on public health due to dust, noise, vibration, pollution, and inflow of construction workers into the sub-project area. The transportation of machine/equipment to the sub-project area may also cause additional hazards, accidents and human injuries to the surrounding communities. It is therefore necessary to generate awareness regarding community health and safety issues in order to protect the local community from hazards or negative health impacts. Sub-project related activities may directly, indirectly or cumulatively change community exposure to hazards.

Mitigation Measures

- Ensure an assessment of health risks and potential impacts on the safety of the local community during the construction and decommissioning of the Sub-project.

- Ensure that Sub-projects avoid or minimize the exacerbation of impacts caused by natural or man-made hazards.
- District Council will ensure that during execution of the Sub-project activities women's and children's health and safety are not at risk due to the movement of construction machinery/equipment or due to the inflow of construction workers.
- Contractor will ensure collaboration with appropriate and relevant authorities and third parties, in order to avoid any damage to the existing under-ground or overhead utility lines and be prepared to respond to accidental and emergency situations in an appropriate manner. This preparation will include the identification of areas where accidents and emergency situations may occur, communities and individuals that may be impacted, response procedures, provision of equipment and resources, designation of responsibilities, communication, and periodic training to ensure effective response.
- Appropriate information about emergency preparedness and response activities, resources, and responsibilities will be disclosed to affected communities.
- The emergency preparedness and response activities will be periodically reviewed and revised, as necessary to reflect changing conditions.
- The proposed work is limited to rehabilitation work on an existing sewerage line therefore, there will be no significant impact of vibration.
- The contractor needs to avoid or minimize the adverse impacts due to operations on the sub-soil, water, and surrounding areas used by the local community.
- Conduct consultations and establish a line of communication with the local community in order to understand and monitor potential impacts. An appropriate consultation and grievance redress mechanism would help manage and minimize potential risks, avoid reputational issues and reduce the risk of conflicts.
- The contractor needs to prevent or minimize the potential for community exposure to water-borne or vector-borne diseases, and other communicable diseases that could result from their operations. This also includes preventing or minimizing the transmission of communicable diseases that may be associated with the temporary or permanent labour associated with the contractor's operations.
- The contractor needs to prevent or minimize the potential for community exposure to hazardous materials that may be released during construction work. If there is a potential for life-threatening hazards, the contractor needs to modify operations or substitute or eliminate substances causing the hazard. The contractor also needs to control the safety of deliveries of raw materials and of transportation and disposal of wastes.
- The contractor needs to inform local community members of potential hazards associated with their construction operations and collaborate with the community and other civic bodies / departments in preparing to respond effectively to any untoward situations.
- The contractor may retain security personnel / guards to safeguard its material and operations, which may pose risks to the surrounding community if not managed properly. This includes ensuring that security personnel have not been implicated in past abuses, have been adequately trained in the use of force (including firearms, if necessary) as well as in the conduct toward workers and the local community.
- The Contractor will be required to barricade/cordon off the sub-project site for the protection of community.
- The contractor will install Physical barrier, to restrict and prevent the entry of persons to any area exposed to a hazard due to his construction / rehabilitation activity
- Contractor will install safety signs and markings to demarcate the construction zone.
- Contractor will ensure provision of controlled access points for the prevention of an unauthorized access to the site.

  The Contractor will maintain a record of the persons who enter or exit from the sub-project site.

7.2. Environmental Impacts

7.2.1. Noise Generation

- Noise may be generated from the generator and other machinery used by the contractors. However, noise pollution mitigation measures will be taken by the contractor for machinery and other equipment with the help of noise insulation products to contain the noise within the acceptable levels.

Mitigation Measures

- The contractors would ensure keeping noise levels within safe limits.
- Noisy machines, vehicle and generators will not be allowed to be used at the sub-project site (noise level will not be more than 85 dBA at 7.5 m distance), properly tuned engines will be allowed only.
- Notifying and coordinating with residents adjacent to project areas prior to construction to inform them of the possibility of temporary noise disruption, and how to report noise complaints.
- The contractor will adhere to the requirements of the EMF, SMF, and the ESMP contained in the contract documents in letter and spirit.

7.2.2. Flora and Fauna

- The proposed rehabilitation of the sub-project has no requirement for tree cutting during the project execution.

Mitigation Measures

- The contractor will avoid cutting any tree present in the sub-project area.
- Contractor will ensure that existing trees are well guarded and protected.
- The contractor will seek prior approval in written format from the PIU-CLICK in case a tree needs to be chopped down, if it is creating any obstruction in the construction activity.

7.2.3. Dust Generation

- The construction activities during the rehabilitation of sewerage line will generate dust in the sub-project area for which mitigation measures will be adopted including sprinkling of water and low speed movement of construction vehicles on earthen areas.

Mitigation Measures

- Regular water sprinkling will be the responsibility of the contractor at the dust generation points during all construction activities. Water will be also sprinkled at vehicular and machinery movement routes to avoid dust spreading to the nearby community as required. Furthermore, during windy and driest days, the frequency of water sprinkling will be increased from two to four times a day.
- In addition, the provision of dust masks and ensuring their use by the workers will also be the responsibility of the contractor.

7.2.4. Vibration

- The proposed work is limited to rehabilitation of the existing sewerage line. Therefore, there will be no significant impact of vibration.

7.2.5. Air Pollution

- Existing average 24 hours monitoring results of Particulate Matter-10 Microns (PM_{10}) and Particulate Matter-2.5 Microns ($PM_{2.5}$) are not complying with the SEQS Limits at the sub-project site.
- The project will cause little air pollution due to some vehicular/ machinery movement during the rehabilitation of the existing sewerage line. The stack emissions from generators, (if used), minor excavations and vehicular/machinery movement at the site can affect the ambient air quality at the sub-project site.

Mitigation Measures

- It will be the responsibility of the contractor to use well-maintained generators and vehicles/machines to keep ambient air quality within the desired level. The contractor will be obliged to provide fitness certificate/maintenance records of the generators, vehicles and machines before deploying them at the construction sites.
- Adequate personnel protection equipment must be provided to the workers and frequently water sprinkling must be carried out at the project site.

7.2.6. Generation of Construction Debris

- Due to the civil works undertaken for the rehabilitation of sewerage line, construction debris will be generated for which proper disposal at designated location will be required by the Contractor in consultation with the District Council staff.

Mitigation Measures

- The debris (rejected material) produced during construction would be disposed-off in government approved/allocated disposal site. Leftover material would not be dumped into stormwater drains or watercourses, because such practices can clog these man-made and natural drainage systems and cause many other problems for the residents/Local Community.

7.2.7. Generation of Hazardous Solid Waste

- The construction activities will generate different types of hazardous solid waste including empty containers of paint, lubricants, grease, fuel, etc. oil filters, and construction waste. In this regard, a Waste Management Plan has been developed, to be implemented by the contractor **(refer to Annex G).**

Mitigation Measures

The construction contractor will implement the mitigation measures provided in the screening report and the ESMP. In addition, the following mitigations will be implemented in true spirit:

- The hazardous waste will be collected and stored at an impervious surface under shade. This waste will be disposed by the SEPA approved waste contractor. Also, the contractor shall provide a safe disposal certificate for the hazardous waste.
- Non-toxic and bio-degradable products will be used whenever possible.
- Hazardous materials will be transported and stored in appropriate containers with clearly visible labels. Hazardous materials will be stored at least 100 feet from any down gradient drainage or within secondary containment capable of containing its entire volume.
- Solid Waste in this particular scenario is mostly the construction waste. That is the unwanted materials produced as a result of construction activities. Contractor to segregate at source by providing labeled waste/dustbins which must be present all across the construction sites. This category of waste could include materials such as, concrete, wood, packaging (cement bags, plastic, cardboard), Waste steel, Electrical wiring, and Nails.

  Contractor's Waste management plan that includes the following:
  - Measures to minimize effluents, emissions, and solid waste.
  - Emphasis on waste minimization and segregation.
  - Measures for handling and disposing of waste.
  - Measures for transporting waste.
- Equipment and work areas will be regularly inspected for signs of leaks and spills. Spill containment and cleanup kits will be available. Any incidental spills or leaks will be contained and cleaned up as soon as it is safe to do so. Any contaminated soil will be collected and disposed of in an appropriate land fill.
- The contractor to properly dispose the sludge in a sanitary landfill.
- Contractor may incinerate sludge in a SEPA approved incinerator facility.

- Equipment refueling and maintenance will be limited to designated areas at least 30 meters (100 feet) from any down gradient drainage.

7.2.8. Impact on Surrounding Water Bodies

- The construction activities will take place for sewerage line. This could have a potential impact on the surrounding water bodies, causing water pollution and affecting the aquatic life.

Mitigation Measures

- Proper disposal of solid waste at designated sites to sustain the water and land quality for domestic requirements.
- Solid waste will not be thrown in Nullah or any water body present in the area.

7.2.9. Disturbance to Biodiversity

- The proposed construction activities will not cause any harm to the biodiversity of the sub-project area.

7.2.10. Health and Safety at Site

- There will be usage of heavy machinery on site, which poses health and safety hazards for the laborers working on site.
- Average 24 hours monitoring results of Particulate Matter-10 Microns (PM_{10}) and Particulate Matter-2.5 Microns ($PM_{2.5}$) are presently not complying with the SEQS Limits at the sub-project site. Therefore, adequate personnel protection equipment must be provided to the workers and frequently water sprinkling must be carried out at the project site.
- Noise quality monitoring was conducted at two different spots at the sub-project site. Monitoring results are not complying with SEQS limits at the sampling point 1 and sample point 2 at sub-project site. Therefore, adequate personnel protection equipment must be provided to the workers.
- Contractor will provide the potable drinking water facility to their workers and monthly testing of drinking worker quality will be carried out at the sub-project site.
- Construction phase activities could lead to occupational health and safety incidents and accidents. Physical displacement, noise, hot and humid weather conditions, dust and air pollution are amongst the major hazards which could be harmful for labors well-being and health. It is important to note that untrained workers may cause harm to themselves as well as others due to lack of awareness and skills. Also, risks for communicable and vector-borne diseases are expected among workers and the surrounding local community due to poor housekeeping practices.
- The World Bank requires that Health and Safety impacts on workers and the community are identified and mitigation measures will be proposed.

Mitigation Measures

- The contractor will ensure that all operators of equipment/machinery are properly trained/certified and the required HSE procedures are duly followed.
- The labor having any transmittable diseases would not be allowed on the construction site.
- The contractor will be required to ensure and strictly implement the SOPs regarding COVID- 19**(Refer to Annex F)**, including daily body temperature check, daily disinfection, quarantine management, area access management, PPEs, emergency response, and drills.
- The Contractor will ensure that the workers are provided with clean drinking water for free, all the time.
- Monthly testing of drinking worker quality will be carried out at the sub-project site.
- Provision of first aid facilities for workers at site for meeting the emergency needs of workers and providing basic medical training to specified work staff and basic medical service and supplies to workers will be ensured by the Contractor.

- The Contractor will observe and maintain standards of Health and Safety towards all employees in line with WB EHS Guidelines along with Sindh Occupational Health and Safety Law.
- Adequate personnel protection equipment must be provided to workers.
- The Contractor will be required to barricade/cordon off the sub-project site for the protection of community.
- The contractor will install Physical barrier, to restrict and prevent the entry of persons to any area exposed to a hazard due to his construction / rehabilitation activity
- Contractor will install safety signs and markings to demarcate the construction zone.
- Contractor will ensure provision of controlled access points for the prevention of an unauthorized access to the site.
- The Contractor will maintain a record of the persons who enter or exit from the sub-project site.
- Contractor will ensure that hazards associated with manual lifting are controlled by proper lifting techniques and work rotation system to reduce the chances of being exposed to work- related stress associated with construction activities.
- Unauthorized personnel will not be allowed to access the proposed project site without permission and safety permits.
- Gas cylinder will be stored in a designated shed having roof top to protect from direct sunlight. Do not expose gas cylinders to temperatures above 45 ^{0}C. Overheating of cylinders can result in buildup of pressure and explosion.
- Do not store gas cylinder with other combustible materials. Flammable substances, such as oil and other solvents, must not be stored in the same area. The storage area will be well ventilated.
- Keep gas cylinder away from any source of heat and ignition.
- Workers should be facilitated by providing appropriate work specific PPE's.
- All the vehicles carrying raw materials, soil and waste to and from the proposed project area will be covered with tarpaulin/plastic sheet; unloading and loading activity will be stopped during windy period.
- Regular water sprinkling will be done to avoid the dust emission into the atmosphere. Furthermore, during windy days, the frequency of the water sprinkling will be increased.

7.2.11. Occupational Health & Safety (OHS)

Occupational health and safety refer to protecting workers from accident, injury or illness associated with exposure to hazards encountered in the workplace. Most importantly, during rehabilitation of sewerage line workers will be exposed to harmful gases (hydrogen disulfide, methane, ammonia and carbon monoxide). However, all the adequate safety measures will be required during the rehabilitation of sewerage line and maintained as per the standard procedures and requirements. The contractor personnel working for rehabilitation of the sewerage system and manholes will be provided with the necessary PPEs as highlighted hereunder.

Mitigation Measures

- Contractor will ensure that workers are provided with a safe and healthy working environment, taking into account risks inherent to rehabilitation of municipal infrastructure activities and specific classes of hazards in the work areas.
- Where relevant, the contractor will ensure that steps are taken to prevent accidents, injury, and disease arising from, associated with, or occurring during the course of work and will ensure the application of preventive and protective measures consistent with international good practice, as reflected in internationally-recognized standards such as the World Bank's General Environmental, Health, and Safety Guidelines.
- Unauthorized personnel will not be allowed to access the proposed project site without permission and safety permits.

- Importance of PPE against the protection of harmful gases (hydrogen disulfide, methane, ammonia and carbon monoxide) will be a part of the training and education for workers. Training will also include on emergency plans, locations of safety equipment, rescue techniques and location of a safety line for rapid exit from a construction work site(when needed), first-aid, and proper rescue procedures for first responders.
- Workers should be facilitated by providing appropriate work specific PPE's such as goggles, mask, ear plugs, gloves, safety shoes and safety helmets.
- Confined work permit will develop by the contractor.
- Smoking will strictly prohibit during the working at the site.
- Any ignitable and flammable materials will not allow to store at the working site.
- Skilled and trained workers will utilize by the contractor for the Confined work.
- Skilled and trained workers will be utilized by the contractor for the sewerage work at the sub-project site.
- In order to provide proper respiratory protection against harmful gases (hydrogen disulfide, methane, ammonia and carbon monoxide), it is recommended to use Full Face Respirators by the Skilled and trained workers. Contractor will responsible to provide the Full Face Respirators to the workers.
- Contractor will be responsible to barricade/cordon off the sub-project site for the protection.
- The contractor will install Physical barrier, to restrict and prevent the entry of persons to any area exposed to a hazard due to his construction / rehabilitation activity
- Contractor will install safety signs and markings to demarcate the construction zone.
- Contractor will ensure provision of controlled access points for the prevention of an unauthorized access to the site.
- The Contractor will maintain a record of the persons who enter or exit from the sub-project site.

Chapter 8. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

8.1. Mobilization of ESMP Team

The ESMP Team will be mobilized to the Sub-project site for implementation of the ESMP along with the award of construction contract since the logistic support to the ESMP will be provided by the District Council through the contractor. The contractors' mobilization schedule must include the provision of this support for the ESMP team from the very beginning of the project.

8.2. Implementation of Mitigation Measures

Contractor for the sub-project will be provided with a copy of the ESMP including the environmental and social screening & monitoring checklists to make arrangements for necessary compliance with the proposed mitigation measures. Regular site visits will also be arranged to monitor the compliance of the mitigation measures and their proper implementation during construction phase.

i. This environmental and social monitoring will be carried out with the help of the Environmental and Social Monitoring Checklist in the ESMP by the Focal Person of District Council, ESC of PIU and Supervision Consultant.
ii. Safeguards Team-PIU will also conduct regular visits at sites and meetings with concerned officials to check the compliance as prescribed in the ESMP.
iii. Based on the prevailing scenario as mentioned in the ESMP, Environmental and Social monitoring checklist will be filled out accordingly.
vi. Monitoring will also cover the analysis reports for air and noise as applicable.
v. Summary of the findings of the monitoring for the compliance of environment and social aspects will be submitted to the World Bank through the PIU.

8.3. Monitoring at Sub-project Level

8.3.1. Construction Phase Monitoring

The construction phase monitoring of the various sub-project components will be required for compliance of the ESMP for the World Bank.

Project Implementation Unit (PIU)

- The overall responsibility of compliance of the Mitigation Plan and compliance reporting to the World Bank will be with District Council. The PIU that is established for the management of the CLICK projects will supervise and monitor the overall compliance of the Mitigation Plan.

Environmental and Social Cell (ESC)

- The Environmental and Social Cell under the PIU will support the District Council Focal Team (environmental and social) to ensure that all relevant environmental and social components of the sub-project activities intact. The ESC will actively support the ESMP Team in environmental and social monitoring to prepare compliance reports and submit to PIU for further submission to the World Bank to fulfill their monitoring, reporting, and compliance requirements for the environmental and social safeguards.

- The ESMP will contain the following plans to eliminate, offset, or reduce environmental, health, and safety impacts during the construction phase:
  - Waste Management Plan
  - Traffic Management Plan
  - COVID – 19 SOPs for Construction on Site.
  - Chance Find Procedures
  - Grievance Redress Mechanism (GRM)
  - Addressing Gender Based Violence

The compliance of the ESMP will be the responsibility of the contractor, and the compliance cost will be added to the bidding documents. The ESC will be responsible to ensure proper implementation of the ESMP during construction phase by the contractors. The ESC may also

hire the services of independent environmental and social Monitoring consultancy firm in order to ensure the implementation of ESMP.

8.3.2. Operational Phase Monitoring

The overall responsibility of compliance of the operational phase will be with the District Council, Karachi.

8.3.3. ESMP Implementation Monitoring Plan

The monitoring of ESMP implementation is required at construction and operational phases of the sub-project. The implementation of ESMP is a pre-requisite of the World Bank approvals. The ESMP at the Sub-project level is shown in Figure 8-1 below.

It is developed to address the environmental and social issues that may arise during construction and operational activities.

Figure 8-1: Environmental and Social Management and Monitoring Plan

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Site Selection				
Selection of site for construction / base camp and material storage that will result in a minimal disruption to the locals, loss of trees and soil erosion.	E&S Team of Contractor	Visual inspection	Before initiation of construction phase	Focal Person of District Council, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC), Supervision Consultant and Construction Contractor

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Noise				
The contractors would ensure keeping noise levels from construction vehicles and machinery is within safe or Sindh Environmental Quality Standards (SEQS) limits (**refer to Annex- I**). Vehicular and machinery will not be allowed to operate at night time. Noisy machines and vehicles will not be allowed at the sub-project site (noise level will not be more than 85 dBA at 7.5 m distance), properly tuned machines and vehicles will be allowed only. Pressure horns will not be allowed to be used for the construction vehicles. The contractor will adhere to the requirements of the mitigation plan contained in the contract documents with true spirit. Confining excessively noisy work to normal working hours (8am-5pm) in the day. Maintain all vehicles in order to keep them in good working order in accordance with manufactures maintenance procedures - Making sure all drivers will comply with the traffic codes concerning maximum speed limit and driving hours; Providing construction workers with suitable hearing protection such as earmuffs and training them in their use. Heavy machinery like percussion hammers and pneumatic drills should be used at a minimum level and should not be used at all during the night.	E&S Team of Contractor	Up-to-date maintenance documents of vehicles and related machinery Use of machinery and equipment having less noise. Provision for personal protective equipment (PPE's), ear muffs/ear plugs to workers. Noise level testing will be carried through SEPA ***certified Lab.	Monthly	**Monitoring Responsibility (MR)** Focal Person of District Council, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor **Reporting Responsibility (RR)** Monthly reporting compliance status of E&S Parameters w.r.t SEQS will be monitored and reported by the construction contractor to PIU CLICK for onward submission. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Air Pollution				
Regular water sprinkling will be the responsibility of the contractor at the dust generation points, during rehabilitation activities. Furthermore, during windy and driest days, the frequency of the water sprinkling will be increased from two to four times a day. Water will be also sprinkled at vehicular and machinery movement routes to avoid dust spreading to the nearby community as required. In addition, the provision of dust masks and ensuring their use by the workers will also be the responsibility of the contractor. All vehicles, machinery, equipment and generators used during construction activities should be kept in good working condition and be properly tuned and maintained to minimize exhaust emissions. Stockpiled materials will be covered to avoid dust/particulate emission. Air quality analysis will be carried out during construction phase by the contractor through engaging SEPA certified contractor, that will be shared with PIU Team. The stack emissions from generators, (if used), minor excavations and vehicular/machinery movement at the site can affect the ambient air quality at sub-project site. It will be the responsibility of the contractor to use well-maintained generators and vehicles/machines to keep ambient air quality within SEQS. The contractor will be obliged to provide fitness certificate/maintenance records of the generators, vehicles and machines before deploying them at the construction sites.	E&S Team of Contractor	Visual inspection Provision of PPEs to the workers Maintenance records of equipment and machinery Ambient Air Quality Analysis for 24hours as per SEQS (CO, SO2, NO, NO2, SPM, PM2.5, PM10, O3 and Lead)by SEPA approved environmental laboratories	Monthly	**Monitoring Responsibility (MR)** Focal Person of District Council, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor **Reporting Responsibility (RR)** Monthly reporting compliance status of E&S Parameters w.r.t SEQS will be monitored and reported by the construction contractor to PIU CLICK for onward submission. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Air Pollution				
Proper use of Personal Protection Equipment (PPEs) i.e. face masks, safety goggles, gloves and gum boats to safeguard labors.				

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Solid and Hazardous Waste				
The debris (rejected material) produced during construction would be disposed-of in government approved/allocated disposal sites. Leftover material would not be dumped into stormwater drains or watercourses, because such practices can clog these man-made and natural drainage systems and cause many other problems for the residents/Local Commuters. The hazardous waste will be collected and stored at the impervious surface under shade. This waste will be disposed by the SEPA approved waste contractor. Also, the contractor shall provide a safe disposal certificate for the hazardous waste. Non-toxic and biodegradable materials will be used whenever possible. Hazardous materials such as chemicals, oils, heavy metals, and harmful solvents, will be properly collected transported and stored in appropriate containers with clearly visible labels. Hazardous materials will be stored at least 100 feet from any down gradient drainage or within secondary containment capable of containing its entire volume (if any generated such as electric batteries). Equipment and work areas will be regularly inspected for signs of leaks and spills. Spill containment and cleanup kits will be available wherever hazardous materials are being used or stored. Any incidental spills or leaks will be contained and cleaned up as soon as it is safe to do so. Any contaminated soil will be collected and disposed of in an appropriate landfill.	E&S Team of Contractor	Visual inspection Waste Disposal Certificates	Monthly	**Monitoring Responsibility (MR)** Focal Person of District Council, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor **Reporting Responsibility (RR)** Monthly reporting compliance status of ESMP and report to be prepared by the construction contractor to submit PIU CLICK for onward submission. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Solid and Hazardous Waste				
Equipment refueling and maintenance will be limited to designated areas at least 30 meters (100 feet) from any down gradient drainage. Solid Waste in this particular scenario is mostly the construction waste. That is the waste materials produced as a result of construction activities. Contractor to segregate at source by providing labeled waste/dustbins which must be present all across the construction sites. This category of waste could include materials such as, concrete, wood, packaging (cement bags, plastic, cardboard), Waste steel, Electrical wiring, and Nails. Contractor's Waste management plan that includes the following: • Measures to minimize effluents, emissions, and solid waste. • Emphasis on waste minimization and segregation. • Measures for handling and disposing of waste. • Measures for transporting waste. Equipment and work areas will be regularly inspected for signs of leaks and spills. Spill containment and cleanup kits will be available wherever hazardous materials are being used or stored. Any incidental spills or leaks will be contained and cleaned up as soon as it is safe to do so. Any contaminated soil will be collected and disposed of in an appropriate land fill. The contractor to properly dispose the sludge in a sanitary landfill. Contractor may incinerate sludge in a SEPA approved incinerator facility.				

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Solid and Hazardous Waste				
Solid Waste will be safely disposed in demarcated waste disposal sites or dedicated garbage transfer stations (GTS) A contract with SEPA Approved waste contractors will be made in case hazardous waste generates from the site, defining the schedule for hazardous waste management and its disposal. Burning of waste oil will be strictly prohibited.				

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Water Pollution				
Proper disposal of solid waste in designated site to sustain the water and land quality for domestic requirements. Solid waste will not be thrown in Nullah or any water body present in the area. Monitoring of Drinking water quality to be done to ensure that the supplied water is fit for human consumption. Monitoring of Wastewater quality will be carried out.	E&S Team of Contractor	Visual inspection Water quality testing as per Sindh standards for drinking water quality. Wastewater quality as per SEQS	Monthly	**Monitoring Responsibility (MR)** Focal Person of District Council, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor **Reporting Responsibility (RR)** Monthly reporting compliance status of E&S Parameters w.r.t SEQS/SSDWQ will be monitored and reported by the construction contractor to PIU CLICK for onward submission. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Vehicular Traffic				
Only drivers with a valid license and car registration documents will be allowed to drive the vehicles. The drivers will be trained to strictly adhere to local traffic laws. At all times, the contractor will provide safe and convenient passage for vehicles, pedestrians and livestock, and will not cause any hurdle on the road for commuters. Appropriate safety precautions will be taken when transporting large equipment on public roadways. Proper signage during construction period, followed by provision of adequate and safe pedestrian crossings and walkways	E&S Team of Contractor	Visual inspection Record checking	Monthly	**Monitoring Responsibility (MR)** Focal Person of District Council, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor **Reporting Responsibility (RR)** Monthly reporting compliance status of ESMP and report to be prepared by the construction contractor to submit PIU CLICK for onward submission. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Flora and fauna				
The contractor will avoid cutting any tree present in the project area, and will ensure protection of the trees. Contractor will ensure that existing trees are well guarded and protected. The contractor will seek prior approval in written format from the PIU-CLICK in case a tree needs to be chopped down, if it is creating any obstruction in the construction activity Limiting vehicular transport to defined roads as to prevent unnecessary injury and habitat destruction. Hunting and trading of any wildlife species will be strictly prohibited; and Strictly prohibit the harming, or taking for falconry or any other purpose of any bird species found on or around the site.	E&S Team of Contractor	Visual inspection	Monthly	**Monitoring Responsibility (MR)** Focal Person of District Council, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor **Reporting Responsibility (RR)** Monthly reporting compliance status of ESMP and report to be prepared by the construction contractor to submit PIU CLICK for onward submission. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Occupational Health and Safety				
The labor having transmittable diseases should not be allowed on the construction site; The contractor will ensure and strictly implement the SOPs regarding COVID- 19 (**refer to Annex F**), including daily body temperature check, daily disinfection, quarantine management, area access management, PPEs, emergency response, and drills; Only skilled workers will be allowed to work at the construction site; Provision of first aid facilities for workers at site for meeting the emergency needs of workers, and providing basic medical training to specified work staff and basic medical service and supplies to workers; Observe and maintain standards of Health and Safety towards all employees in line with WB EHS Guidelines along with Sindh Occupational Health and Safety Law The contractor will ensure that hazards associated with manual lifting are controlled by proper lifting techniques, Work rotation system will reduce the chances of being exposed to work- related stress associated with construction activities. Unauthorized personnel will not be allowed to access the proposed project site without permission and safety permits. Unauthorized personnel will not be allowed to access the proposed project site without permission and safety permits. Workers should be facilitated by providing appropriate work specific PPE's such as goggles, mask, ear plugs, gloves, rubber and safety shoes and safety helmets.	E&S Team of Contractor	Visual inspection Availability of PPEs Record of EHS and COVID-19 SOPs implementation Record of trainings or Drills	Monthly	**Monitoring Responsibility (MR)** Focal Person of District Council, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor **Reporting Responsibility (RR)** Monthly reporting compliance status of ESMP and report to be prepared by the construction contractor to submit PIU CLICK for onward submission. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Occupational Health and Safety				
Provide persons working on the site with appropriate training, equipment and the information necessary to ensure their safety; The facility should have firefighting system, Proper ventilation system, first aid facilities; Mosquito repellant to be provided to the labors such as coil and sprays. The camps may maintain cleanliness and hygienic condition. Proper ventilation may be provided in labour camps. Contractor will maintain a labour register with name, age and sex with supporting document (preferably copy of ID card). All the vehicles carrying raw materials fine materials, soil and waste to and from the proposed project area will be covered with tarpaulin/plastic sheet; unloading and loading activity will be stopped during windy period. Regular water sprinkling will be done to avoid the dust emission into the atmosphere. Furthermore, during windy days, the frequency of the water sprinkling will be increased. Proper PPE for use with harmful gases (hydrogen disulfide, methane, ammonia and carbon monoxide) will be a part of the training and education for workers and also any visitors who may become exposed to the gas on the work site. This training will include emergency plans, locations of safety equipment, rescue techniques and location of a safety line for rapid exit from a construction work site(when needed), first-aid, and proper rescue procedures for first responders. Workers should be facilitated by providing appropriate work specific PPE's such as goggles,				

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Occupational Health and Safety				
mask, ear plugs, gloves, safety shoes and safety helmets. Confined work permit will be developed by the contractor. Smoking will be strictly prohibited during the working at the site. Any ignitable and flammable materials will not be allowed to store at the working site. Skilled and trained workers will be utilized by the contractor for the Confined work. In order to provide proper respiratory protection against harmful gases (hydrogen disulfide, methane, ammonia and carbon monoxide), it is recommended to use Full Face Respirators by the Skilled and trained workers. Contractor will be responsible to provide the Full Face Respirators to the workers.				

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Grievance Redress Mechanism (Labor Living and Working Conditions)				
The worker's Grievance Redress Mechanism (GRM) must be developed and communicated among the workers to lodge complains (**refer to Annex H)**. The Worker Camp and storage area will be located on areas far enough from water points, houses and sensitive areas in consultation with the community and the District Council. Worker camps shall not be located within 500 meters of any sensitive receptors, and at least 200 meters from any surface water course and not within 2-km of a protected area. Worker camp will be provided with basic facilities and utilities including but not limited to: notice boards and regulations of the company and about the Project, beds, mosquito nets, blankets, clean drinking water and safe portable water, sufficient waste bins, first aid kits and necessary medicines, fire extinguishers, etc. Appropriate fencing, security check points, gates and security guards should be provided at the construction sites to ensure the security of all plant, equipment, machinery and materials, as well as to secure the safety of site staff; and The Contractor must guarantee that good relations are maintained with local communities and their leaders to help reduce the risk of vandalism and theft. Workers should be provided with clean drinking water and hygienic food and safe & healthy environment to work and live. Adequate personnel protection equipment must be provided to workers. Frequently water sprinkling must be carried out at the sub-project site.	E&S Team of Contractor	Visual inspection GRM Register Employment Documents of Workers	Monthly	**Monitoring Responsibility (MR)** Focal Person of District Council, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor **Reporting Responsibility (RR)** Monthly reporting compliance status of ESMP and report to be prepared by the construction contractor to submit PIU CLICK for onward submission. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Grievance Redress Mechanism (Labor Living and Working Conditions)				
Gas cylinder will be stored in a designated shed having roof top to protect from direct sunlight. Do not expose gas cylinders to temperatures above 45 ^{0}C. Overheating of cylinders can result in buildup of pressure and explosion. Do not store gas cylinder with other combustible materials. Flammable substances, such as oil and other solvents, must not be stored in the same area. The storage area will be well ventilated. Keep gas cylinder away from any source of heat and ignition. Project workers will be provided with information and documentation that is clear and understandable regarding their terms and conditions of employment. Project workers will be paid on a regular basis as required by national law and labor management procedures such as Sindh Minimum Wages Act and Sindh Payment of Wages Act 2015. Where required by national law or the labor management procedures, project workers will receive written notice of termination of employment and details of severance payments in a timely manner. A child under the minimum age established in accordance with Employment of Child Act (1991) and no child will be employed or engaged in connection with the project. The contractor will ensure the availability of one toilet facility for 50 laborer with proper water closet (WC) and running water.				

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Community Health and Safety				
Ensure an assessment of health risks and potential impacts on the safety of affected communities during the design, construction, operation, and decommissioning of Sub-projects. Ensure that Sub-projects avoid or minimize the exacerbation of impacts caused by natural or man-made hazards, such as flooding from the main bulk line as happened in the past that could result from land use changes due to sub-project activities. District Council will ensure that Sub-projects are gender-sensitive and consider how women's and children's health and safety could be particularly at risk. Contractor will ensure collaboration with appropriate and relevant authorities and third parties, in order to be prepared to respond to accidental and emergency situations in an appropriate manner. This preparation will include the identification of areas where accidents and emergency situations may occur, communities and individuals that may be impacted, response procedures, provision of equipment and resources, designation of responsibilities, communication, and periodic training to ensure effective response. Appropriate information about emergency preparedness and response activities, resources, and responsibilities will be disclosed to affected communities. Maintain a complaint register on site and it must be communicated to the internal staff and the public Close consultation with local communities to identify optimal solutions where needed	E&S Team of Contractor	Visual inspection GRM Record	Monthly	**Monitoring Responsibility (MR)** Focal Person of District Council, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor **Reporting Responsibility (RR)** Monthly reporting compliance status of ESMP and report to be prepared by the construction contractor to submit PIU CLICK for onward submission. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Community Health and Safety				
Contractor shall give preference to local community members in the Project Area of Influence, to the extent feasible, with respect to the employment of unskilled labor Community grievances will be recorded and responded to on an urgent basis; No Hazardous and non-hazardous waste will be dumped outside any community. The contractor needs to avoid or minimize the adverse impacts due to operations on soil, water, and surrounding areas used by the local community. Conduct consultations and establish a line of communication with the local community in order to understand and monitor potential impacts. An appropriate consultation and grievance mechanism would help manage and minimize potential risks, avoid reputational issues and reduce the risk of conflicts. The contractor needs to prevent or minimize the potential for community exposure to water-borne or vector-borne disease, and other communicable diseases that could result from their operations. This also includes preventing or minimizing the transmission of communicable diseases that may be associated with the inflow of temporary or permanent labour associated with the contractor's operations. The contractor needs to inform local community members of potential hazards associated with their construction operations and collaborate with the community and other civic bodies / departments in				

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Community Health and Safety				
preparing to respond effectively to any untoward situations. The contractor may retain security personnel / guards to safeguard its material and operations, which may pose risks to the surrounding community if not managed properly. This includes ensuring that security personnel have not been implicated in past abuses, have been adequately trained in the use of force (including firearms, if necessary) as well as in the conduct toward workers and the local community.				

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Gender Based Violence (GBV)				
To avoid the conflicts related to labour inflow. Awareness raising among the local community including females about the project and construction work. Contractor must ensure that workers should not be allowed to accumulate or gather in the residential communities within the site. Alternative routes/pathways for pedestrian should be provided to avoid mixing of women with workers. Raise awareness among the stakeholders specifically the resident communities and the labour of the potential risks of GBV, and establish response services in the nearby communities that can respond to instances of GBV (particularly those related to issues of labour inflow). Provisions of gender disaggregated bathing, changing, and sanitation facilities; and Contractor should take proper measures to address and resolve issues relating to harassment, intimidation, and exploitation, especially in relation to women. Develop and implement proper Labour Management Plan including a code of conduct for workers providing guidance on allowable behaviour. Labour camp(s) should be established away from residential population. Preference should be given to the local people to work with contractor, and contractor should hire maximum labour force from the project area, this will reduce the labour inflow. Awareness should be created among the work force to ensure respect for local customs, norms and traditions.	E&S Team of Contractor	Visual inspection	Monthly	**Monitoring Responsibility (MR)** Focal Person of District Council, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor **Reporting Responsibility (RR)** Monthly reporting compliance status of ESMP and report to be prepared by the construction contractor to submit PIU CLICK for onward submission. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Gender Based Violence (GBV)				
Construction work should be completed in stipulated period of time.				

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Socio-Culture and Cultural Heritage				
Archaeological site of Chaukandi Tombs is located in the vicinity of sub-project site at a distance of about 2000ft (0.64km). It will not have any adverse impact due to the proposed rehabilitation work of the sewerage line. Apart from the above archaeological site, there were no identified historical and cultural resources within the sub-project's RoW. The sub-project area is already in use of the local residents as well as general traffic. The construction activities will not cause any damage to cultural heritage. The contractors' workers will be sensitized and fully informed about the importance of the Archaeological site before the commencement of the work. The Right of way for the proposed sub-project site will be properly barricaded all along the corridor to limit the construction activities therein. The contractor will ensure that all operators of heavy machine and equipment will be properly trained and certified. Vehicular traffic and machinery will not be allowed to operate at night time. Risk assessment will be carried out by contractor prior to civil work. Noisy machines and vehicles will not be allowed to be used at the sub-project site, only properly tuned-up machines and vehicles will be allowed. Water will be sprinkled along the vehicular and machinery movement routes to avoid dust spreading. The Contractors would be trained to address privacy issues and behave ethically.	E&S Team of Contractor	Visual Inspection Public Consultation record	Monthly	**Monitoring Responsibility (MR)** Focal Person of District Council, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor **Reporting Responsibility (RR)** Monthly reporting compliance status of ESMP and report to be prepared by the construction contractor to submit PIU CLICK for onward submission. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
The contractor's staff would be trained to respect the local norms. The Contractors would be required to follow Chance Find Procedure as given at **Annex (E)** in the ESMP. The water will be sprinkled at vehicular and machinery movement routes to avoid dust spreading.				

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Site Restoration				
Contractor will obtain approval for excavation and submit the plan of rehabilitating the site after excavation. Site restoration must be completed immediately after completion of the sub-project. After the completion of construction activities at each site, all construction camp facilities will be dismantled and removed from the site. Various activities to be carried out for site rehabilitation include: Oil and fuel contaminated soil will be removed and transported and buried in waste disposal areas. Soak pits, septic tanks will be covered and effectively sealed off. Debris (rejected material) will be disposed of suitably. In cases, where the construction camps site is located on a private land holding, the contractor would still have to restore the campsite as per this specification. The rehabilitation is mandatory and will be included in the agreement with the landowner by the contractor. Also, the contractor would have to obtain a certificate for satisfaction from the landowner.	E&S Team of Contractor	Visual inspection	After Construction of sub-project	**Monitoring Responsibility (MR)** Focal Person of District Council, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor. **Reporting Responsibility (RR)** Final report of compliance status of ESMP and report to be prepared by the construction contractor to submit PIU CLICK for onward submission. Final report of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Recommendation for operation and maintenance: CLICK does not support operation and maintenance of the proposed sub-project. However, District Council is requested to follow the following measures to mitigate the environmental and social impacts during operation phase.				
Operational Phase				
Frequently maintenance of Sewerage Line and manholes;	District Council	Visual inspection Maintenance Record	Weekly	Focal Person of District Council along with line departments

8.4. Sub-Project's Tentative ESMP Cost

The cost for the implementation of construction stage activities given in this ESMP will be included within the civil works contract for this sub-project with total cost of PKR**. 1,160,000/-.**

Table 8-1: ESMP Implementation Cost

Name of item	**Total Quantity**	**Unit Rate**	**Total Amount in PKR**
Masks Box	50	300	15,000
Safety Shoes	50	1,500	75,000
Safety Gloves	50	100	5,000
Full Face Respirator	20	7,000	140,000
First Aid Box	10	600	6,000
Ear Plugs	50	100	5,000
Safety Helmets	50	500	25,000
Safety Jackets with reflectors	50	300	15,000
Sanitizer	50	500	25,000
Thermo-gun	5	5,000	25,000
Provision of Dust Bins	5	1,000	5,000
Reflective Tape	20	200	4,000
Safety cones	20	1000	20,000
Safety boards	4	1,000	4,000
		SUB TOTAL (01)	**369,000**
Environmental Analysis (By engaging Sindh EPA Certified Laboratory)			
Ambient Air Quality Analysis for 24hours (CO, SO_2, NO, NO_2, SPM, $PM_{2.5}$, PM_{10}, O_3 and Lead); once in a month	3	40,000	120,000
Noise Level Monitoring; once in a month	3	1,000	3,000
Drinking Water Quality Testing; once in a month	3	33,000	99,000
Wastewater Quality Testing; once in a month	3	33,000	99,000
Mobilization Charges; once in a month	3	5,000	15,000
		SUB TOTAL (02)	**336,000**
OTHERS			
Water sprinkling	24	10,000	240,000
Internal Training for sub-project construction staff comprises:	1	200,000	200,000
- Project overview			
- ESMP/ESR implementation, communication, documentation, logistics and reporting requirement			
- GBV/SH			
- Code of Conduct			
- Grievances Redress Mechanism			
Project dissemination materials such as banners, flayers,		15,000	15,000
		SUB TOTAL (03)	**455,000**
		GRAND TOTAL (1+2+3) PKR	**1,160,000/-**

Chapter 9. ROLES AND RESPONSIBILITIES

9.1. Institutional Framework

The proponent, District Council will be responsible for the compliance of environmental and social safeguard requirements of the CLICK Sub-project. The Sub-project activities will be monitored and managed by the Project Implementation Unit (PIU) CLICK ES team, established in Local Government Department (LGD), Government of Sindh. The ESC will be custodian of the ESMF and will support the District Council in ensuring the EMF, SMF and World Bank operational policies' compliance of the sub-projects during the implementation phase.

9.2. ESMP Teams at Sub-project Level

The ESMP Teams will include following that will be working at the sub-project level. The following will be part of the ESMP team:

-District Council Management
-Environmental and Social Cell (ESC), PIU, CLICK
-Design and Supervisory Consultants
-Contractor
-Independent Monitoring Consultant

9.3. Tasks Assigned

9.3.1. Project Implementation Unit (PIU) CLICK

The PIU, headed by the Program Director (PD), will be responsible for general execution of the project and streamlining the safeguards related tasks of the sub-project. The PIU will ensure compliance with national as well as the World Bank environmental and social safeguard requirements including the top supervision of the ESMP and other management plans implementation.

9.3.2. Environmental and Social Cell (ESC)

The Environmental and Social Cell (ESC) established in the PIU will support the District Council Focal personnel for CLICK in taking care of the environmental and social safeguard requirements of their sub-project components. The ESC will be the custodian of the Environmental & Social Management Framework (ESMF) at the overall project level and support District Council.

9.3.3. Supervisory Consultants

The PIU will engage Design and Supervisory Consultants having adequate human resources to assist District Council and PIU in safeguards planning and preparation, implementation and monitoring. The Design and Supervisory Consultants will mobilize a team of qualified specialists with experienced enumerators and surveyors for impact assessment, and conducting meaningful consultations during project design stage who will facilitate the PIU.

9.3.4. Sub-Project Contractor

The Contractor working on the proposed Sub-project will:

- The contractor will hire each specialist for Social, Environment and HSE respectively to look after their respective aspects of sub-project and to ensure the implementation of ESMP on ground in true spirit.
- Develop a work plan based on the environmental and social safeguards;
- Submit the work plan and schedule to the PIU, CLICK;
- Train/create awareness for all personnel and community on relevant environmental and social safeguards measures; and
- Submit implementation report on the environmental and social safeguards and compliance of EHS aspects to the PIU.

- Follow the instructions of the PIU / Consultants regarding the implementation of the ESMP in its true spirit.

9.3.5. Independent Monitoring Consultant

The PIU will hire IMC to review and monitor the implementation progress throughout the process and evaluate the level of achievement of ESMP objectives, identify gaps, if any, and propose remedial measures for implementation.

9.4. Reporting Requirements

The PIU with assistance of IMC, Construction contractor and Design and Supervision consultant will prepare and submit monthly and quarterly environmental and social safeguards monitoring reports to World Bank respectively, as part of project implementation performance monitoring arrangements.

9.5. Capacity Building for ESMP Implementation

Capacity building is an integral element for institutional strengthening. For effective implementation of the ESMP, it is imperative to build the capacity of the Implementing Agency with the required skill sets to achieve desired goals.

Capacity building is required for the stakeholders involved for the implementation, supervision, monitoring, evaluation, and reporting of the mitigation measures during construction and operational phases of the Sub-project components. The following key personnel are required for the accomplishment of the environmental and social safeguard requirements of the CLICK project:

- District Council Director General (Technical Services) - District Council DG-
- District Council Sr. Director (Municipal Services) -District Council DM
- District Council Municipal Commissioner - District Council MC
- Environmental and Social Cell (ESC)
- Supervisory Consultants (ECF)
- Environmental Laboratory (EL)
- Contractors (CONTs)

9.5.1. Training of Personnel

Training is a vital component of capacity building, where appropriate and timely training to the officials can bring about a positive change in the functioning of the staff and employees. There must be training in generic areas such as human resource management, information management, and in handling specialized tasks that pertain to specific environmental and social issues and their impacts on people. Training programs should also be conducted on social and environmental safeguard policies, and on how to prepare and implement both safeguard planning and monitoring instruments.

At the project site itself, the training will focus on awareness about safeguard requirements among the staff who will be involved in activities related to the implementation of the sub-project. The training programs will be designed to improve knowledge and ability to deliver environmental and social support across sub-project at all implementation levels.

The trainings for the personnel can be in the form of programmed trainings, seminars, workshops, or knowledge forum exchanges. Appropriate staff will provide regular awareness training and refresher training to all the staff working on the CLICK project, the staff in the relevant sub-project, and all personnel on site. Figure 9.1 below shows the detail of trainings required for the capacity building of the mentioned key stakeholders on the environmental and social safeguard requirements.

Training Requirements for Capacity Building

PROJECT STAGE	ACTIVITY	Target audience	Frequency	RESPONSIBILITY
Pre-Construction Phase	Environmental Compliance and Safety Awareness Training	Construction Managerial and Supervision Staff, Labor and subcontractors.	Once	E&S Personnel of Contractor
	Workers Health and Safety procedures & Community Safety	Construction Managerial and Supervision Staff, Labor, subcontractors and Community representatives.	Once (Induction Training)	E&S Personnel of Contractor
	HIV/STI Awareness Training	Construction Managerial and Supervision Staff, Labor, subcontractors and Community representatives.	Once	E&S Personnel of Contractor
	Sexual Harassment and other Gender Based Violence	Construction Managerial and Supervision Staff, Labor, subcontractors and Community representatives.	Once	E&S Personnel of Contractor
	Use of Environmental and Social Checklists	E&S and Contractor Managerial Staff	Once	PIU-ESC
	Construction Environmental and social management Plan	Construction Managerial and Supervision Staff, Labor and subcontractors.	Once	E&S Personnel of Contractor
Construction Phase	Workers Health and Safety procedures & Community Safety	Construction Managerial and Supervision Staff, Labor, subcontractors and Community representatives.	Bi-Monthly	E&S Personnel of Contractor
	Site Inspection	Construction Managerial and Supervision Staff, Labor and subcontractors	Bi-Monthly	E&S Personnel of Contractor

PROJECT STAGE	ACTIVITY	Target audience	Frequency	RESPONSIBILITY
	Completion of Checklists	Construction Managerial and Supervision Staff, Labor and subcontractors	Bi-Monthly	E&S Personnel of Contractor
	Quarterly Environmental Progress Report	Construction Managerial and Supervision Staff, Labor and subcontractors	Monthly	E&S Personnel of Contractor
Review of ESMP	Update ESMP as necessary (Change of working methods or scope of work, update ESMP as necessary)	Construction Managerial and Supervision Staff, Labor and subcontractors	Monthly	E&S Personnel of Contractor

Figure 9-1: Training Requirements for Capacity Building

9.5.2. Provision of Equipment and Supplies

The equipment and supplies required to successfully implement the ESMP are outlined in table 8.1 of ESMP implementation cost. These supplies will be provided by the contractor, which will be integral for the construction activities that will be conducted. The equipment and supplies provided will ensure the safety of the personnel involved in the construction stage activities.

All logistic support required by the ESMP Teams for the effective implementation of the ESMP will be provided by the Contractor.

ANNEXURES

Annex A: Environmental and Social Monitoring Checklist

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
1.	**Site Selection**				
	Selection of site for construction / base camp and material storage that will result in a minimal disruption to the locals, loss of trees and soil erosion.				
2.	**Noise**				
	The contractors would ensure keeping noise levels from construction vehicles and machinery is within safe or Sindh Environmental Quality Standards (SEQS) limits (refer to Annex I). Vehicular and machinery will not be allowed to operate at night time. Noisy machines and vehicles will not be allowed at the sub-project site (noise level will not be more than 85 dBA at 7.5 m distance), properly tuned machines and vehicles will be allowed only. Pressure horns will not be allowed to be used for the construction vehicles. The contractor will adhere to the requirements of the mitigation plan contained in the contract documents with true spirit. Confining excessively noisy work to normal working hours (8am-5pm) in the day. Maintain all vehicles in order to keep them in good working order in accordance with manufactures maintenance procedures - Making sure all drivers				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	will comply with the traffic codes concerning maximum speed limit and driving hours; Providing construction workers with suitable hearing protection such as earmuffs and training them in their use. Heavy machinery like percussion hammers and pneumatic drills should be used at a minimum level and should not be used at all during the night.				
3.	**Air Pollution**				
	Regular water sprinkling will be the responsibility of the contractor at the dust generation points, during rehabilitation activities. Furthermore, during windy and driest days, the frequency of the water sprinkling will be increased from two to four times a day. Water will be also sprinkled at vehicular and machinery movement routes to avoid dust spreading to the nearby community as required. In addition, the provision of dust masks and ensuring their use by the workers will also be the responsibility of the contractor. All vehicles, machinery, equipment and generators used during construction activities should be kept in good working condition and be properly tuned and maintained to minimize exhaust emissions. Stockpiled materials will be covered to avoid dust/particulate emission. Air quality analysis will				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	be carried out during construction phase by the contractor through engaging SEPA certified contractor, that will be shared with PIU Team. The stack emissions from generators, (if used), minor excavations and vehicular/machinery movement at the site can affect the ambient air quality at sub-project site. It will be the responsibility of the contractor to use well-maintained generators and vehicles/machines to keep ambient air quality within SEQS. Ambient Air Quality Analysis for 24hours as per SEQS (CO, SO_2, NO, NO_2, SPM, $PM_{2.5}$, PM_{10}, O_3 and Lead) by SEPA approved environmental laboratories on Monthly basis. The contractor will be obliged to provide fitness certificate/maintenance records of the generators, vehicles and machines before deploying them at the construction sites. Proper use of Personal Protection Equipment (PPEs) i.e. face masks, safety goggles, gloves and gum boots to safeguard labors by the contractor during the project execution on site.				
4.	**Solid and Hazardous Waste**				
	The debris (rejected material) produced during construction would be disposed-of in government approved/allocated disposal sites. Leftover material would not be dumped into stormwater drains or watercourses, because such				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	practices can clog these man-made and natural drainage systems and cause many other problems for the residents/Local Commuters. The hazardous waste will be collected and stored at the impervious surface under shade. This waste will be disposed by the SEPA approved waste contractor. Also, the contractor shall provide a safe disposal certificate for the hazardous waste. Non-toxic and biodegradable materials will be used whenever possible. Hazardous materials such as chemicals, oils, heavy metals, and harmful solvents, will be properly collected transported and stored in appropriate containers with clearly visible labels. Hazardous materials will be stored at least 100 feet from any down gradient drainage or within secondary containment capable of containing its entire volume (if any generated such as electric batteries). Equipment and work areas will be regularly inspected for signs of leaks and spills. Spill containment and cleanup kits will be available wherever hazardous materials are being used or stored. Any incidental spills or leaks will be contained and cleaned up as soon as it is safe to do so. Any contaminated soil will be collected and disposed of in an appropriate landfill. Equipment refueling and maintenance will be limited to designated areas at least 30 meters (100 feet) from any down gradient drainage.				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	Solid Waste in this particular scenario is mostly the construction waste. That is the unwanted materials produced as a result of construction activities. Contractor to segregate at source by providing labeled waste/dustbins which must be present all across the construction sites. This category of waste could include materials such as, concrete, wood, packaging (cement bags, plastic, cardboard), Waste steel, Electrical wiring, and Nails. Contractor's Waste management plan that includes the following: - Measures to minimize effluents, emissions, and solid waste. - Emphasis on waste minimization and segregation. - Measures for handling and disposing of waste. - Measures for transporting waste. Equipment and work areas will be regularly inspected for signs of leaks and spills. Spill containment and cleanup kits will be available wherever hazardous materials are being used or stored. Any incidental spills or leaks will be contained and cleaned up as soon as it is safe to do so. Any contaminated soil will be collected and disposed of in an appropriate land fill. The contractor to properly dispose the sludge in a sanitary landfill.				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	Contractor may incinerate sludge in a SEPA approved incinerator facility. Solid Waste will be safely disposed in demarcated waste disposal sites or dedicated garbage transfer stations (GTS) A contract with SEPA Approved waste contractors will be made in case hazardous waste generates from the site, defining the schedule for hazardous waste management and its disposal. Burning of waste oil will be strictly prohibited. Solid Waste will be safely disposed in demarcated waste disposal sites or dedicated garbage transfer stations (GTS) A contract with SEPA Approved waste contractors should be made in case hazardous waste generates from the site, defining the schedule for hazardous waste management and its disposal. Burning of waste oil should be strictly prohibited.				
5.	**Water Pollution**				
	Proper disposal of solid waste in designated site to sustain the water and land quality for domestic requirements. Solid waste will not be thrown in Nullah or any water body present in the area.				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	Monitoring and testing of drinking and wastewater quality to be done.				
6.	**Vehicular Traffic**				
	Only drivers with a valid license and car registration documents will be allowed to drive the vehicles. The drivers will be trained to strictly adhere to local traffic laws. At all times, the contractor will provide safe and convenient passage for vehicles, pedestrians and livestock, and will not cause any hurdle on the road for commuters. Appropriate safety precautions will be taken when transporting large equipment on public roadways. Proper road signage during construction period, followed by provision of adequate and safe pedestrian crossings and walkways.				
7.	**Flora and fauna**				
	The contractor will avoid cutting any tree present in the project area, and will ensure protection of the trees present at the sub-project site. Contractor will ensure that existing trees are well guarded and protected. The contractor will seek prior approval in written format from the PIU-CLICK in case a tree needs to				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	be chopped down, if it is creating any obstruction in the construction activity Limiting vehicular transport to defined roads as to prevent unnecessary injury and habitat destruction. Hunting and trading of any wildlife species will be strictly prohibited; and Strictly prohibit the harming, or taking for falconry or any other purpose of any bird species found on or around the site.				
8.	**Occupational Health and Safety**				
	The labor having transmittable diseases should not be allowed on the construction site; The contractor will ensure and strictly implement the SOPs regarding COVID- 19 (refer to Annex F), including daily body temperature check, daily disinfection, quarantine management, area access management, PPEs, emergency response, and drills; Only skilled workers will be allowed to work at the construction site; Provision of first aid facilities for workers at site for meeting the emergency needs of workers, and providing basic medical training to specified work staff and basic medical service and supplies to workers;				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	Observe and maintain standards of Health and Safety towards all employees in line with WB EHS Guidelines along with Sindh Occupational Health and Safety Law The contractor will ensure that hazards associated with manual lifting are controlled by proper lifting techniques, Work rotation system will reduce the chances of being exposed to work-related stress associated with construction activities. Unauthorized personnel will not be allowed to access the proposed project site without permission and safety permits. Unauthorized personnel will not be allowed to access the proposed project site without permission and safety permits. Workers should be facilitated by providing appropriate work specific PPE's such as goggles, mask, ear plugs, gloves, rubber and safety shoes and safety helmets. Provide persons working on the site with appropriate training, equipment and the information necessary to ensure their safety; The facility should have firefighting system, Proper ventilation system, first aid facilities;				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	Mosquito repellant to be provided to the labors such as coil and sprays. The camps may maintain cleanliness and hygienic condition. Proper ventilation may be provided in labour camps. Contractor will maintain a labour register with name, age and sex with supporting document (preferably copy of ID card). All the vehicles carrying raw materials fine materials, soil and waste to and from the proposed project area will be covered with tarpaulin/plastic sheet; unloading and loading activity will be stopped during windy period. Regular water sprinkling will be done to avoid the dust emission into the atmosphere. Furthermore, during windy days, the frequency of the water sprinkling will be increased. Proper PPE for use with harmful gases (hydrogen disulfide, methane, ammonia and carbon monoxide) will be a part of the training and education for workers and also any visitors who may become exposed to the gas on the work site. This training will include emergency plans, locations of safety equipment, rescue techniques and location of a safety line for rapid exit from a construction work site(when needed), first-aid, and proper rescue procedures for first responders.				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	Workers should be facilitated by providing appropriate work specific PPE's such as goggles, mask, ear plugs, gloves, safety shoes and safety helmets. Confined work permit will be developed by the contractor. Smoking will be strictly prohibited during the working at the site. Any ignitable and flammable materials will not be allowed to store at the working site. Skilled and trained workers will be utilized by the contractor for the Confined work. In order to provide proper respiratory protection against harmful gases (hydrogen disulfide, methane, ammonia and carbon monoxide), it is recommended to use Full Face Respirators by the Skilled and trained workers. Contractor will be responsible to provide the Full Face Respirators to the workers.				
9.	**Grievance Redress Mechanism (Labor Living and Working Conditions)**				
	The worker's Grievance Redress Mechanism (GRM) must be developed and communicated among the workers to lodge complains **(refer to Annex H)**. The Worker Camp and storage area will be located on areas far enough from water points,				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	houses and sensitive areas in consultation with the community and the District Council. Worker camps shall not be located within 500 meters of any sensitive receptors, and at least 200 meters from any surface water course and not within 2-km of a protected area. Worker camp will be provided with basic facilities and utilities including but not limited to: notice boards and regulations of the company and about the Project, beds, mosquito nets, blankets, clean drinking water and safe portable water, sufficient waste bins, first aid kits and necessary medicines, fire extinguishers, etc. Appropriate fencing, security check points, gates and security guards should be provided at the construction sites to ensure the security of all plant, equipment, machinery and materials, as well as to secure the safety of site staff; and The Contractor must guarantee that good relations are maintained with local communities and their leaders to help reduce the risk of vandalism and theft. Workers should be provided with clean drinking water and hygienic food and safe & healthy environment to work and live. Adequate personnel protection equipment must be provided to workers.				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	Frequently water sprinkling must be carried out at the sub-project site. Gas cylinder will be stored in a designated shed having roof top to protect from direct sunlight. Do not expose gas cylinders to temperatures above 45^0C. Overheating of cylinders can result in buildup of pressure and explosion. Do not store gas cylinder with other combustible materials. Flammable substances, such as oil and other solvents, must not be stored in the same area. The storage area will be well ventilated. Keep gas cylinder away from any source of heat and ignition. Project workers will be provided with information and documentation that is clear and understandable regarding their terms and conditions of employment. Project workers will be paid on a regular basis as required by national law and labor management procedures such as Sindh Minimum Wages Act and Sindh Payment of Wages Act 2015. Where required by national law or the labor management procedures, project workers will receive written notice of termination of employment and details of severance payments in a timely manner.				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	A child under the minimum age established in accordance with Employment of Child Act (1991) and no child will be employed or engaged in connection with the project. The contractor will ensure the availability of one toilet facility for 50 laborer with proper water closet (WC) and running water.				
10.	**Community Health and Safety**				
	Ensure an assessment of health risks and potential impacts on the safety of affected communities during the design, construction, operation, and decommissioning of Sub-projects. Ensure that Sub-projects avoid or minimize the exacerbation of impacts caused by natural or man-made hazards, such as flooding from the main bulk line as happened in the past that could result from land use changes due to sub-project activities. District Council will ensure that Sub-projects are gender-sensitive and consider how women's and children's health and safety could be particularly at risk. Contractor will ensure collaboration with appropriate and relevant authorities and third parties, in order to be prepared to respond to accidental and emergency situations in an appropriate manner. This preparation will include the identification of areas where accidents and emergency situations may occur, communities and individuals that may be impacted, response procedures, provision of equipment and				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	resources, designation of responsibilities, communication, and periodic training to ensure effective response. Appropriate information about emergency preparedness and response activities, resources, and responsibilities will be disclosed to affected communities. Maintain a complaint register on site and it must be communicated to the internal staff and the public Close consultation with local communities to identify optimal solutions where needed Contractor shall give preference to local community members in the Project Area of Influence, to the extent feasible, with respect to the employment of unskilled labor Community grievances will be recorded and responded to on an urgent basis; No Hazardous and non-hazardous waste will be dumped outside any community. The contractor needs to avoid or minimize the adverse impacts due to operations on soil, water, and surrounding areas used by the local community. Conduct consultations and establish a line of communication with the local community in				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	order to understand and monitor potential impacts. An appropriate consultation and grievance mechanism would help manage and minimize potential risks, avoid reputational issues and reduce the risk of conflicts. The contractor needs to prevent or minimize the potential for community exposure to water-borne or vector-borne disease, and other communicable diseases that could result from their operations. This also includes preventing or minimizing the transmission of communicable diseases that may be associated with the influx of temporary or permanent labour associated with the contractor's operations. The contractor needs to inform local community members of potential hazards associated with their construction operations and collaborate with the community and other civic bodies / departments in preparing to respond effectively to any untoward situations. The contractor may retain security personnel / guards to safeguard its material and operations, which may pose risks to the surrounding community if not managed properly. This includes ensuring that security personnel have not been implicated in past abuses, have been adequately trained in the use of force (including firearms, if necessary) as well as in the conduct toward workers and the local community.				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
11.	**Gender Based Violence (GBV)**				
	To avoid the conflicts related to labour inflow. Awareness raising among the local community including females about the project and construction work. Contractor must ensure that workers should not be allowed to accumulate or gather in the residential communities within the site. Alternative routes/pathways for pedestrian should be provided to avoid mixing of women with workers. Raise awareness among the stakeholders specifically the resident communities and the labour of the potential risks of GBV, and establish response services in the nearby communities that can respond to instances of GBV (particularly those related to issues of labour inflow). Provisions of gender disaggregated bathing, changing, and sanitation facilities; and Contractor should take proper measures to address and resolve issues relating to harassment, intimidation, and exploitation, especially in relation to women. Develop and implement proper Labour Management Plan including a code of conduct for workers providing guidance on allowable behaviour.				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	Labour camp(s) should be established away from residential population. Preference should be given to the local people to work with contractor, and contractor should hire maximum labour force from the project area, this will reduce the labour inflow. Awareness should be created among the work force to ensure respect for local customs, norms and traditions. Construction work should be completed in stipulated period of time.				
12.	**Socio-Culture and Cultural Heritage**				
	Archaeological site of Chaukandi Tombs is located in the vicinity of sub-project site at a distance of about 2000ft (0.64km). It will not have any adverse impact due to the proposed rehabilitation work of the sewerage line. Apart from the above archaeological site, there were no identified historical and cultural resources within the sub-project's RoW. The sub-project area is already in use of the local residents as well as general traffic. The construction activities will not cause any damage to cultural heritage. The contractors' workers will be sensitized and fully informed about the importance of the Archaeological site before the commencement of the work.				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
	The Right of way for the proposed sub-project site will be properly barricaded all along the corridor to limit the construction activities therein. The contractor will ensure that all operators of heavy machine and equipment will be properly trained and certified. Vehicular traffic and machinery will not be allowed to operate at night time. Risk assessment will be carried out by contractor prior to civil work. Noisy machines and vehicles will not be allowed to be used at the sub-project site, only properly tuned-up machines and vehicles will be allowed. Water will be sprinkled along the vehicular and machinery movement routes to avoid dust spreading. The Contractors would be trained to address privacy issues and behave ethically. The contractor's staff would be trained to respect the local norms. The Contractors would be required to follow Chance Find Procedure as given at **Annex (E)** in the ESMP. The water will be sprinkled at vehicular and machinery movement routes to avoid dust spreading.				

S. No.	Mitigation Measures Implemented	Status (Yes/No)	Means of Monitoring (Documents/Pictorial Evidences)	Reason for Non-Compliance	Corrective Measures
13.	**Site Restoration**				
	Contractor will obtain approval for excavation and submit the plan of rehabilitating the site after excavation. Site restoration must be completed immediately after completion of the sub-project. After the completion of construction activities at each site, all construction camp facilities will be dismantled and removed from the site. Various activities to be carried out for site rehabilitation include: Oil and fuel contaminated soil will be removed and transported and buried in waste disposal areas. Soak pits, septic tanks will be covered and effectively sealed off. Debris (rejected material) will be disposed of suitably. In cases, where the construction camps site is located on a private land holding, the contractor would still have to restore the campsite as per this specification. The rehabilitation is mandatory and will be included in the agreement with the landowner by the contractor. Also, the contractor will have to obtain a certificate for satisfaction from the landowner.				

Contractor Details	District Council Focal Person Details
Name: ----------	Name: ----------
Designation: ----------	Designation: ----------
Signature:	Signature:
Date:	Date:
Checklist filled by:	**Checklist reviewed by:**
Name: ----------	Name: ----------
Designation: ----------	Designation: ----------
Signature:	Signature:
Date:	Date:

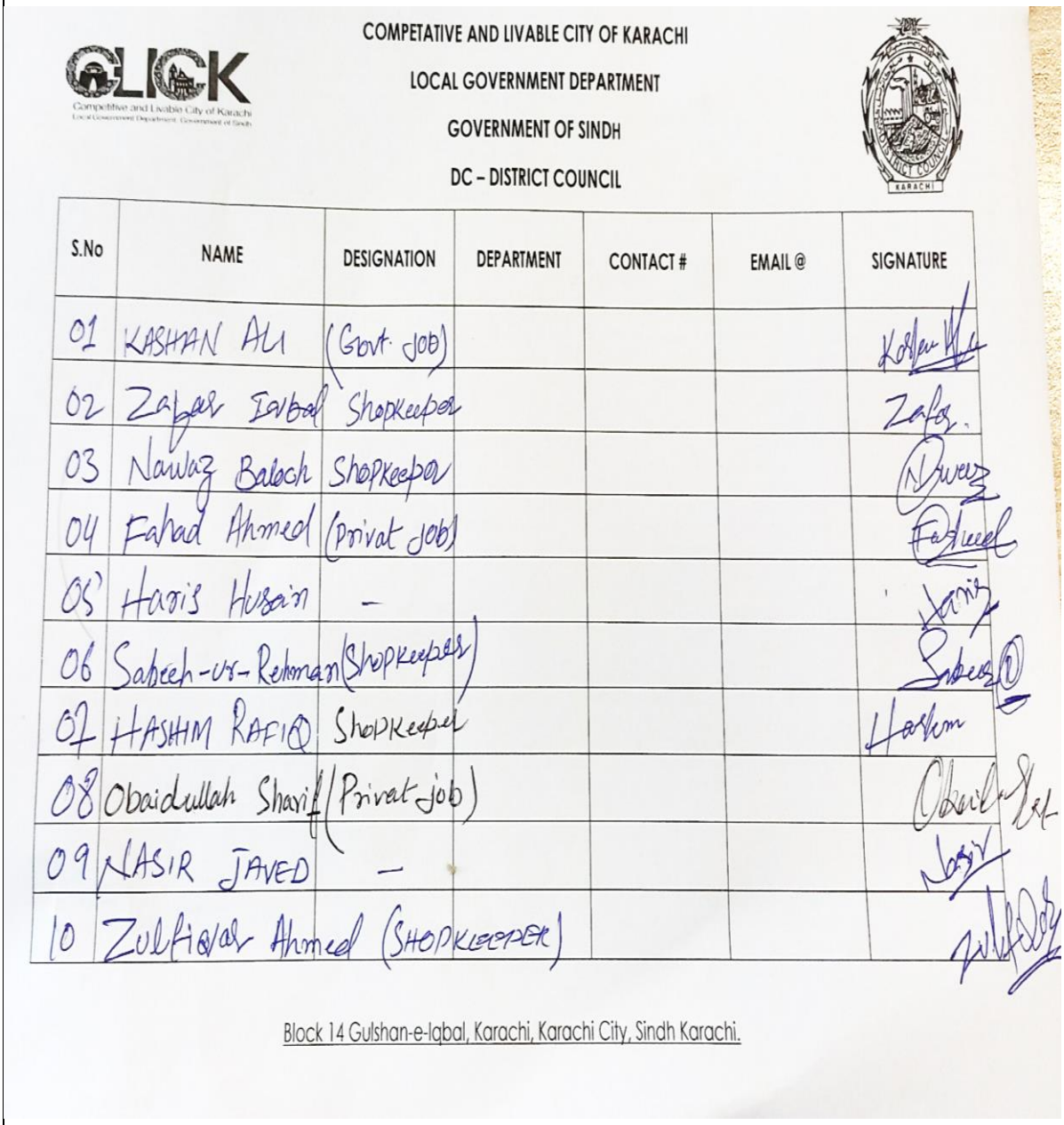
Annex B: Photographs of the Surrounding

	
National Highway (N-5) in the vicinity of sub-project site	Mateen Complex in the vicinity of sub-project site
	
Local community was unable to utilized the road due to stagnation of sewage	Road was blocked due to sewage

	
Open manhole	Open manhole
	
Existing Sanitation condition at the sub-project site	Existing condition at the sub-project site

Annex C: List of Participants during Stakeholder Consultation

Community Consultation # 01: Community consultation meeting at Sub-project site on dated 29th May, 2021.



COMPETATIVE AND LIVABLE CITY OF KARACHI

LOCAL GOVERNMENT DEPARTMENT

GOVERNMENT OF SINDH

DC – DISTRICT COUNCIL

S.No	NAME	DESIGNATION	DEPARTMENT	CONTACT #	EMAIL @	SIGNATURE
01	KASHAN ALI	(Govt. JOB)				
02	Zafar Iqbal	Shopkeeper				
03	Nawaz Baloch	Shopkeeper				
04	Fahad Ahmed	(Privat Job)				
05	Haris Husain	–				
06	Sabeeh-ur-Rehman	(Shopkeeper)				
07	HASHIM RAFIQ	Shopkeeper				
08	Obaidullah Sharif	(Privat Job)				
09	NASIR JAVED	–				
10	Zulfiqar Ahmed	(SHOPKEEPER)				

Block 14 Gulshan-e-Iqbal, Karachi, Karachi City, Sindh Karachi.

Community Consultation # 02: Community consultation meeting at the Sub-project on dated 12th November, 2021

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GOVERNMENT OF SINDH

DISTRICT COUNCIL KARACHI

P/L SEWERAGE LINE FORM DAWOOD SHORO GOTH TO SUKHAN NADI VIA SHAH LATIF 19-B UC- 25, RAZZAK ABAD BIN QASIM DIVISION, DISTRICT COUNCIL KARACHI

Public Consultative Meeting, Date: 03:00 PM, Date: 12-NOV-2021.

S.No	NAME	DESIGNATION	DEPARTMENT	CONTACT #	EMAIL @	SIGNATURE
1	Gul bibi	house wife		-		[illegible]
2	Reshma	"		-		[illegible]
3	Mah bibi	House wife		-		[illegible]
4	Chandra	House wife		-		[illegible]
5	Marium	House wife		-		[illegible]
6	Aqeel Ahmed			0321-2458852		[illegible]
7	Zahid Hussain			0313-2843900		[illegible]
8	Muhammad Khan	Govt		0322-2388230		[illegible]
9	Muhammad Saleem Afghani	Govt H.M.		03112986522		[illegible]
10	Salahuddin Afghani			03012196096		[illegible]

Address: District Council Karachi Head Office ST-05, Sir Shah Suleman Road, Gulshan-e-Iqbal, Karachi City, and Sindh.

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GOVERNMENT OF SINDH

DISTRICT COUNCIL KARACHI

P/L SEWERAGE LINE FORM DAWOOD SHORO GOTH TO SUKHAN NADI VIA SHAH LATIF 19-B UC- 25, RAZZAK ABAD BIN QASIM DIVISION, DISTRICT COUNCIL KARACHI

Public Consultative Meeting, Date: 03:00 PM, Date: 12-NOV-2021.

S.No	NAME	DESIGNATION	DEPARTMENT	CONTACT #	EMAIL @	SIGNATURE
11	غلام رضا		0303236989			غلام رضا
12	جاوید					
13	منظور بخش		03408059726			جاوید
14	[illegible]		03003342421			منظور بخش
15	اسد اللہ		03002090572			[illegible]
16			03060287610			اسد اللہ
17	[illegible]		03332909117			[illegible]
18			03232402695			[illegible]
19	Umid Ali					[illegible]
20	Shoukat		0333-2249396			[illegible]

Address: District Council Karachi Head Office ST-05, Sir Shah Suleman Road, Gulshan-e-Iqbal, Karachi City, and Sindh.

COMPETATIVE AND LIVABLE CITY OF KARACHI

LOCAL GOVERNMENT DEPARTMENT

GOVERNMENT OF SINDH

P/L SEWERAGE LINE FORM DAWOOD SHORO GOTH TO SUKHAN NADI VIA SHAH LATIF 19-B UC- 25, RAZZAK ABAD BIN QASIM DIVISION, DISTRICT COUNCIL KARACHI

Public Consultative Meeting, Date: 03:00 PM, Date: 12-NOV-2021.

S.No	NAME	DESIGNATION	DEPARTMENT	CONTACT #	EMAIL @	SIGNATURE
21	برکت اللہ			03310200249		
22	M. Jibran Gujjar			0313-2404606		[illegible]
23	Akhtar Muneer			0300-2731937		[illegible]
24	[illegible]			0300-2296877		[illegible]
25	Tahir			03159092450		[illegible]
26	[illegible]			03332213743		[illegible]
27	M. Ayoob	03462125906		03007016957		[illegible]
28	یونس					یونس
29						
30	SIDER IGHAN			03358436148		SIBR

Address: District Council Karachi Head Office ST-05, Sir Shah Suleman Road, Gulshan-e-Iqbal, Karachi City, and Sindh.

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P/L SEWERAGE LINE FORM DAWOOD SHORO GOTH TO SUKHAN NADI VIA SHAH LATIF 19-B UC- 25, RAZZAK ABAD BIN QASIM DIVISION, DISTRICT COUNCIL KARACHI

Public Consultative Meeting, Date: 03:00 PM, Date: 12-NOV-2021.

S.No	NAME	DESIGNATION	DEPARTMENT	CONTACT #	EMAIL @	SIGNATURE
31	M. JAMIL GUJJAR			0303-4441148	smm.gujjar@gmail.com	[illegible]
32	M. Parvez			0300-9212554		[illegible]
33	Yal Muhammad			0312-2711360		yala
34	جان محمد			03082939048		جان محمد
35	بنات گل			0347-8317069		
36	[illegible]			03332206997		[illegible]
37						
38	[illegible]	—	—	—	—	[illegible]
39	Mukhtyar			0333-3607027		[illegible]
40	[illegible]			03003382246		[illegible]

Address: District Council Karachi Head Office ST-05, Sir Shah Suleman Road, Gulshan-e-Iqbal, Karachi City, and Sindh.

Consultative meeting with line departments and secondary stakeholders at District Council Office, Karachi on dated 11th November, 2021

COMPETATIVE AND LIVABLE CITY OF KARACHI

LOCAL GOVERNMENT DEPARTMENT

GOVERNMENT OF SINDH

Scheme-I : CONSTRUCTION OF METALED ROAD FROM PAKA SARAK TO BALOCH MOHLA, BROHI MOHLA, UC MALH-10, AND CC PAVER/CHECK TILES FLOORING AT SHAFI MOHAMMAD MOHLA, ABDUL KARIM MOHLA, UC MURAD MEMON-11, SD MURAD MEMON.

Scheme-II : P/L OF SEWERAGE LINE FORM DAWOOD SHORO GOTH TO SUKHAN NADI VIA SHAH LATIF 19-B UC- 25, RAZZAK ABAD BIN QASIM DIVISION, DISTRICT COUNCIL KARACHI

Secondary Stakeholders Consultative Meeting with Line Departments, Date: 11:30 AM Date: 11-Nov-2021.

S.No	NAME	DESIGNATION	DEPARTMENT	CONTACT #	EMAIL @	SIGNATURE
1	Hamna Haleem	SS. Specialist	CLICK	—	—	
2	Tayyab Shafique	Env. Specialist	CLICK	—	—	
3.	M. AZHAR. KHAN	D.D.(T)	SEPA.	0333-2255736	—	
4.	Mohammad Ruiz	SE. WTM-I	KWSB	0300-3559627	—	
5.	Syed Masih ullah	A.EE DCK	DCK.	03302857812	—	
6.	Munir Ahmed	A. Manager PTCL.	PTCL	0331-8552229	—	
7	NASEEM YASIN	ACC. NCO	coast guard	0344-7331624		
8-	SYED ASIF ALI SHAH	D.E.	D.CK	0300-3110959	—	
9	Noor Hassan Jokhio	Administrator	D.C.K	0321-8910469.	—	
10-	Aftab Baloch	Chief Officer DCK	D.C.K	03002349941	—	

Address: District Council Karachi Head Office ST-05, Sir Shah Suleman Road, Gulshan-e-Iqbal, Karachi City, and Sindh.

COMPETATIVE AND LIVABLE CITY OF KARACHI

LOCAL GOVERNMENT DEPARTMENT

GOVERNMENT OF SINDH

Scheme-I : CONSTRUCTION OF METALED ROAD FROM PAKA SARAK TO BALOCH MOHLA, BROHI MOHLA, UC MALH-10, AND CC PAVER/CHECK TILES FLOORING AT SHAFI MOHAMMAD MOHLA, ABDUL KARIM MOHLA, UC MURAD MEMON-11, SD MURAD MEMON.

Scheme-II : P/L OF SEWERAGE LINE FORM DAWOOD SHORO GOTH TO SUKHAN NADI VIA SHAH LATIF 19-B UC- 25, RAZZAK ABAD BIN QASIM DIVISION, DISTRICT COUNCIL KARACHI

Secondary Stakeholders Consultative Meeting with Line Departments, Date: 11:30 AM Date: 11-Nov-2021.

S.No	NAME	DESIGNATION	DEPARTMENT	CONTACT #	EMAIL @	SIGNATURE
11	Muhammad Siddique Tunio	Executive Engineer RAC	KW&SB.	0300-9282883		
12	M. Shoaib Shaikh	Dist. Admin Focal Person (Comm)	DCK	0323-3103953		
13	TABISH RAZA HASNAIN	Supdt Engineer (Estt)	KWPSB	0321 2000585		
14	Syed Baber Ali	Consultant	EA consulting.	0334-2304323		
15	WAQAS IQBAL	CONSULTANT	11	03212276947		

Address: District Council Karachi Head Office ST-05, Sir Shah Suleman Road, Gulshan-e-Iqbal, Karachi City, and Sindh.

Annex D: Traffic Management Plan

Traffic Management:

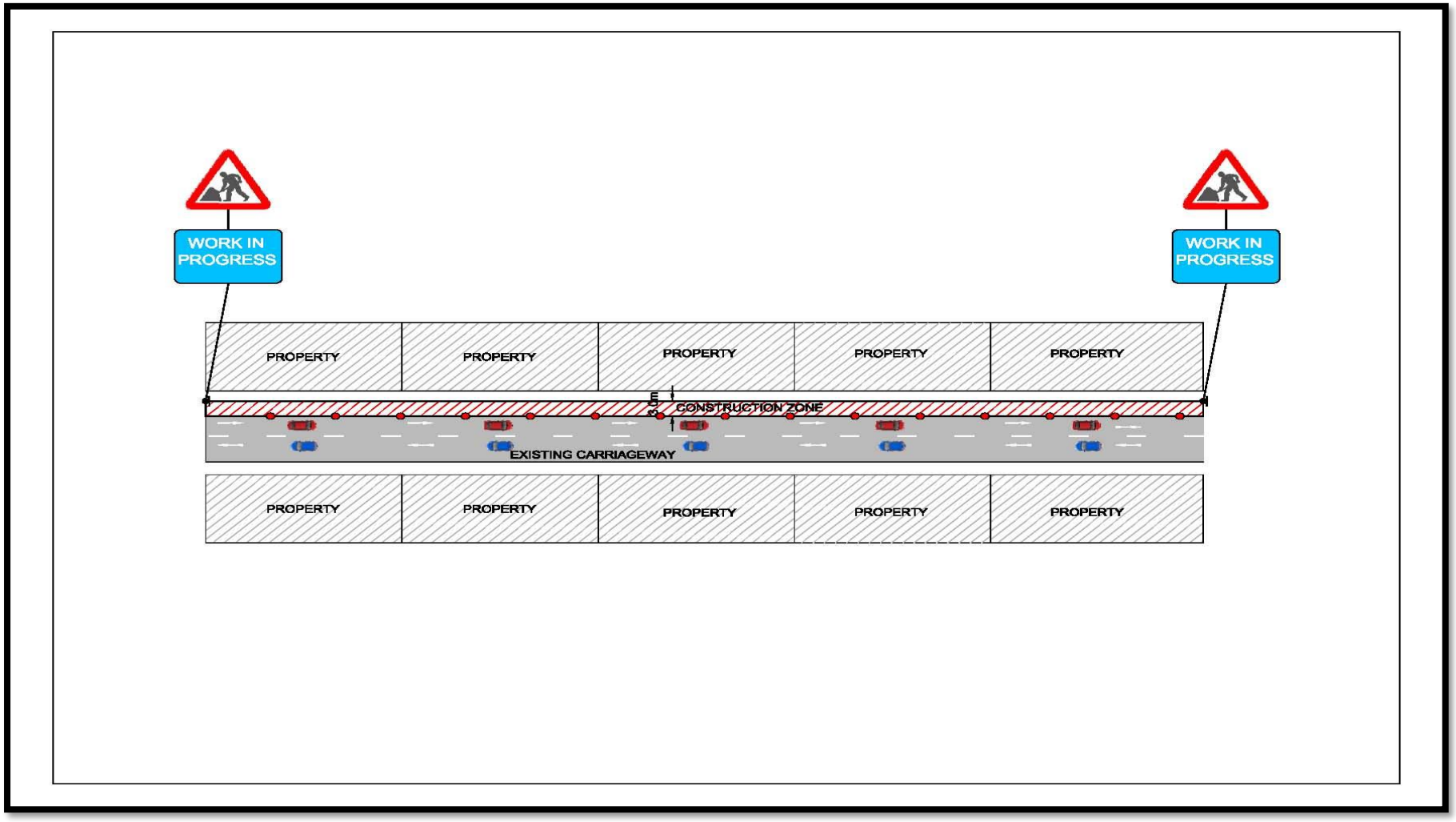
The contractor will comply with the traffic management plan to ensure that safe passageways are provided for all individuals and livestock.

To manage the traffic effectively, a traffic management and monitoring plan has been created and will be implemented for the sub-project.

Table D.1. Traffic Management and Monitoring Plan

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameters	Frequency	Monitoring Responsibility
Traffic Management				
Only drivers with a valid license and car registration documents will be allowed to drive the vehicles. The drivers will be trained to strictly adhere to local traffic laws. At all times, the contractor will provide safe and convenient passage for vehicles, pedestrians and livestock, and will not cause any hurdle on the road for commuters. The contractor will take all necessary measures for the safety of traffic during construction work and provide, erect and maintain such barricades, including signs, markings, flags, lights and flagmen as may be required for the information and protection of traffic approaching or passing through the construction site. Proper traffic controls will be in place during closures to minimize impacts on traffic circulation and for traffic safety.	E&S Team of Contractor / Sub-contractor	Visual Inspection	During construction and Post execution of sub-project	Focal Person of District Council, ESS and Supervision Consultant

Construction Zone is shown in the figure below.


WORK IN PROGRESS
WORK IN PROGRESS
PROPERTY
PROPERTY
PROPERTY
PROPERTY
PROPERTY
CONSTRUCTION ZONE
EXISTING CARRIAGEWAY
PROPERTY
PROPERTY
PROPERTY
PROPERTY
PROPERTY

Annex E: Chance Find Procedure

Purpose of the chance finds procedure
The chance find procedure is a project-specific procedure that outlines actions required if previously unknown heritage resources, particularly archaeological resources, are encountered during project construction or operation. A Chance Find Procedure, as described in Guidance Note of World Bank and law on Cultural Antiquities of Sindh, is a process that prevents chance finds from being disturbed until an assessment by a competent specialist is made and actions consistent with the requirements are implemented.

Scope of the chance find procedure
This procedure is applicable to all activities conducted by the personnel, including contractors that have the potential to uncover a heritage item/site. The procedure details the actions to be taken when a previously unidentified and potential heritage item/site is found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

Induction/Training
All personnel, especially those working on earth movements and excavations, are to be inducted on the identification of potential heritage items/sites and the relevant actions for them with regards to this procedure during the Project induction and regular toolbox talks.

Chance find procedure
If any person discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken:

- Stop all works in the vicinity of the find, until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained;
- Immediately notify a construction site in-charge. The in-charge will then notify the PIU-
- CLICK and the Supervision Consultant;
- Record details in Incident Report and take photos of the find;
- Delineate the discovered site or area; secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities take over;
- Preliminary evaluation of the findings by archaeologists. The archaeologist must make a rapid assessment of the site or find to determine its importance. Based on this assessment the appropriate strategy can be implemented. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage such as aesthetic, historic, scientific or research, social and economic values of the find;
- Sites of minor significance (such as isolated or unclear features, and isolated finds) should be recorded immediately by the archaeologist, thus causing a minimum disruption to the work schedule of the Contractor. The results of all archaeological work must be reported to the Ministry/Agency, once completed.
- In case of significant find the Agency/Ministry (Sindh Archaeology Department, hereinafter referred to as Heritage team) should be informed immediately and in writing within 7 days from the find).
- The onsite archaeologist provides the Heritage team with photos, other information as relevant for identification and assessment of the significance of heritage items.
- The Ministry must investigate the fact within 2 weeks from the date of notification and provide response in writing.
- Decisions on how to handle the finding shall be taken by the responsible authorities. -This could include changes in the layout (such as when finding an irremovable remain of

cultural or archaeological importance) conservation, preservation, restoration and salvage;

- Construction works could resume only after permission is granted from the responsible authorities.

In case no response received within the 2 weeks period mentioned above, this is considered as authorization to proceed with suspended construction works.

One of the main requirements of the procedure is record keeping. All finds must be registered. Photo log, copies of communication with decision making authorities, conclusions and recommendations/guidance, implementation reports kept.

Additional information
Management options for archaeological site

Site avoidance. If the boundaries of the site have been delineated attempt must be made to redesign the proposed development to avoid the site. (The fastest and most cost-effective management option)

Mitigation. If it is not feasible to avoid the site through redesign, it will be necessary to sample it using data collection program prior to its loss. This could include surface collection and/or excavation. (The most expensive and time-consuming management option.)

Site Protection. It may be possible to protect the site through the installation of barriers during the time of the development and/or possibly for a longer term. This could include the erection of high visibility fencing around the site or covering the site area with a geotextile and then capping it with fill. The exact prescription would be site- specific.

Management of replicable and non-replicable heritage

- Different approaches for the finds apply to replicable and non-replicable heritage.

Replicable heritage

- Where tangible cultural heritage that is replicable and not critical is encountered, mitigation measures will be applied. The mitigation hierarchy is as follows:
- Avoidance;
- Minimization of adverse impacts and implementation of restoration measures, in situ;
- Restoration of the functionality of the cultural heritage, in a different location;
- Permanent removal of historical and archaeological artefacts and structures;
- Compensation of loss - where minimization of adverse impacts and restoration not feasible.

Non-replicable heritage

- Most cultural heritage is best protected by in situ preservation, since removal is likely to result in irreparable damage or even destruction of the cultural heritage.
- Nonreplicable cultural heritage must not be removed unless all of the following conditions are met:
- There are no technically or financially feasible alternatives to removal;
- The overall benefits of the project conclusively outweigh the anticipated cultural heritage loss from removal; and
- Any removal of cultural heritage must be conducted using the best available technique advised by relevant authority and supervised by archaeologist.

Human Remains Management Options

- The handling of human remains believed to be archaeological in nature requires communication according to the same procedure described above. There are two possible courses of action:

Avoid. The development project is redesigned to completely avoid the found remains. An assessment should be made as to whether the remains may be affected by residual or accumulative impacts associated with the development, and properly addressed by a comprehensive management plan.

Exhumate. Exhumation of the remains in a manner considered appropriate by decision makers. This will involve the predetermination of a site suitable for the reburial of the remains. Certain ceremonies or procedures may need to be followed before development activities can recommence in the area of the discovery.

EMERGENCY CONTACTS

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Sindh Environmental Protection Agency
Address: Head Office, Plot No. ST-2/1, Sector-23,
Korangi Industrial Area, Karachi
Tel# 021-35065950 Fax : 021-35065940

Directorate General Antiquities & Archaeology
Address: C-82, Block 2 Clifton, Karachi
Tel: Phone: 021-99212126

Annex F: COVID-19 Standards Operating Procedures (SOPs) for Construction in English and Urdu Languages for the Contractor

COVID-19 Pandemic and Health and Safety Measures

Given the unprecedented nature of the COVID-19 pandemic, contractors are bound to take all necessary precautions to maintain the health and safety related measures at site and to ensure suitable arrangements regarding hygiene requirements for the prevention of COVID-19 pandemic.

Scope:
These SOPs are intended to provide consistent measures on construction activities of all types and sizes in line with the recommendations on social distancing and to ensure contractors, sub-contractors, and other individuals associated with the CLICK Project make every effort to comply.

Objectives:

Prioritize the health and safety of workers and of their surrounding individuals and communities;

- Apply recommendations and best practices from health authorities to construction site procedures;
- Implement COVID-19 Standard operating procedures in true spirit across the construction activities or sites; and
- Foster open communication amongst stakeholders and ensure a respectful work environment.

Following are the measures that should be implemented at the construction site to avoid the spread of Covid-19:

Activities	Adaptive Measures
Pre- Execution Phase	
Profile preparation	Detail profile of the workforce will be developed Enlist the names, addresses and contact number Breakdown of the workforce (workers from local community and those who will do house renting). Workers will be instructed to minimize contact with people near the site, and in certain cases be prohibited from leaving the site for the duration of their contract.
Initial Screening	All enlisted workforce should go through initial screening (checking temperature using thermo gun) to confirm their fitness. Ensuring the availability of Thermo guns at site. Checking temperature of all workers and maintaining record. If a worker shows symptoms of COVID-19 (e.g. fever, dry cough, fatigue), it is Site Supervisor's responsibility to immediately remove worker from the site and refer him to the nearest health facility. It's also his responsibility to prevent a worker who has been in contact with infected co-worker from returning to the site for 14 days.
During Execution Phase	
Restricted Movement/ Demobilization of staff	Entry/exit to the work site should be controlled and documented for workers and other people. Possible measures should include: Ensure that the social distancing is observed on site All workers who reside in site labor camps (if any) should be provided separate accommodation keeping in view social distancing protocol. Implementation of emergency preparedness and response plan covering the detail of a treatment facilities, procedure to inform health authorities, how to sanitize site, how to screen remaining workers, etc.
Special Arrangements regarding PPEs	Ensure availability of PPEs at site including disposable masks, gloves etc. Record keeping of PPE stock availability. If PPE items are unavailable due to world-wide shortages, alternatives such as dust masks, construction gloves and eye goggles should be arranged. While these items are not recommended, they should be used as a last resort if no medical PPE is available.
General Hygiene	Encourage employees to wash their hands at least for 20 seconds with soap provided at key places throughout site. Where hand washing facilities do not exist or are not adequate, hand sanitizers should be placed. Maintain a distance of at least one meter.

Activities	Adaptive Measures
Pre- Execution Phase	
Training sessions	Contractors E&S Team will arrange awareness sessions for Contractors and their labor force. Sessions related to safety procedures, use of construction PPEs, occupational health and safety issues, and code of conduct specially privacy issues including social distancing Post appropriate signage and pictorial displays at site about COVID-19 Health &Safety measures. Site supervisor will arrange briefings from time to time with workforce, and encourage them to report to their supervisor or the COVID-19 focal person if they have symptoms. (TORs are attached as Annex F-II). Training staff who will be monitoring entry to the site, providing them with the resources they need to document entry of workers, conducting temperature checks and recording details of any worker that is denied entry.
Operationalization of Grievance Redress Mechanism	Contractor should ensure implementation of GRM developed by PIU for addressing specific COVID related grievances, which would allow community & workers to quickly report issues, such as a lack of PPE, lack of proper procedures, and allow the project to respond and take necessary action.
Role of PIU	PIU is responsible for sharing the COVID-19 checklist with the contractors in the sub-project procurement documents. Arrange meetings with contractors for support and guidance where needed.
Role of supervision consultant	The consultant must ensure the implementation of Environmental and Social Management Plans as per the ESMP along with mentioned COVID related activities / protocols. Ensure that the necessary PPEs (as per contract) have been issued to the staff by the respective contractor.
Post Execution Phase	
Post Screening	If a worker shows any symptoms of COVOD-19, he should be immediately reported to the concerned health department.
Cleaning and waste disposal	All waste (PPEs and sanitation related) shall be disposed of properly following Sindh Hospital Waste Management Rules, 2014. Providing cleaning staff with adequate protective gear, cleaning equipment, and disinfectants. Where it is anticipated that cleaners will be required to clean areas that have been or are suspected to have been contaminated with COVID-19, providing them with appropriate PPEs. If appropriate PPE is not available, cleaners should be provided with best available alternatives.

Annex F: II

TORS for COVID-19 Focal Person from District Council

Responsibilities to include:

- Monitoring, supervising, and reporting on COVID-19 related issues
- Coordination and reporting arrangements with the contractors
- Raising awareness and training of workers in mitigating the spread of COVID-19
- Prepare a plan to handle COVID-19 cases in the light of WHO guidelines
- Implementing a communication strategy with the community, community leaders and local government.

Annex G: Waste Management Plan

Waste Management:
Improper disposal of solid waste from construction camps leads to air, water, and soil pollution in case if it is burnt, thrown in the surface drains, or on open land. The solid waste dumping site can become a breeding ground for mosquitoes and flies which could be the source of outbreak for diseases. Poor solid waste management can increase the peak flow capacity of the city's drainage system, and also negatively impact people's health and the environment.

The rehabilitation of the existing Sewerage Line does involve construction activities that will generate waste. The solid waste that will be generated includes empty containers of paint, lubricants, grease, fuel, oil filters, and other construction waste. Appropriate measures will be implemented in the waste management plan to address the ways to manage solid waste and hazardous waste.

Table G.1. Waste Management and Monitoring Plan

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameters	Frequency	Monitoring Responsibility
Solid Waste Management				
The debris (rejected material) produced during construction would be disposed-of in government approved/allocated disposal sites. Leftover material will not be dumped into stormwater drains or watercourses, because such practices can clog these man-made and natural drainage systems and cause many other problems for the residents/Local Commuters. Solid Waste will be safely disposed in demarcated waste disposal sites or dedicated garbage transfer stations (GTS). A contract with SEPA Approved waste contractors should be made in case hazardous waste generates from the site, defining the schedule for hazardous waste management and its disposal. Burning of waste oil should be strictly prohibited. All food waste will be contained in covered bins and disposed of on a frequent basis to avoid attracting wildlife.	E&S Team of Contractor / Sub-contractor	Visual Inspection	During construction	Focal Person of District Council, ESS and Supervision Consultant

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameters	Frequency	Monitoring Responsibility
Trash bins will be accessible at all locations where waste is generated. The project area will be kept clean and free of litter and no litter shall be allowed to disperse to the surrounding area. Solid waste will be removed from the site and transported to a municipal landfill or disposal site. Waste will not be dumped or buried in unauthorized areas or burned. Human waste associated with the worker camp and latrines will be properly contained and disposed.				
Hazardous Solid Waste Management				
The construction contractors will implement the Hazardous Solid Waste Management Plan (mentioned in ESMP). The Hazardous Solid Waste Management will identify proper management procedures for all hazardous materials and wastes that may be encountered during construction, including handling, labeling, transporting, and storing procedures. In addition, the plan will address the following: • Non-toxic and biodegradable produces will be used whenever possible. • Hazardous materials will be transported and stored in appropriate containers with clearly visible labels. Hazardous materials will be stored at least 100 feet from any down gradient drainage or within secondary containment capable of containing its entire volume. • Equipment and work areas will be regularly inspected for signs of leaks and spills. Spill containment and cleanup kits will be available wherever hazardous materials will be used or stored. Any incidental spills or leaks will be	E&S Team of Contractor / Sub-contractor	Visual inspection	Pre and During Construction of the sub-project	Focal Person of District Council, ESS and Supervision Consultant

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameters	Frequency	Monitoring Responsibility
contained and cleaned up as soon as it is safe to do so. Contaminated soil will be collected and disposed of in an appropriate land fill. • Equipment refueling and maintenance will be limited to designated areas at least 30 meters (100 feet) from any down gradient drainage. All workers will receive training on proper handling and storage of hazardous materials, as well as spill response and cleanup procedures, prior to working on the project site.				

Annex H: Grievance Redress Mechanism

The purpose of the Grievance Redress Mechanism is to allow the citizens to use this method to voice their opinions, concerns, and other queries through a structured process. This mechanism will be beneficial in building trust amongst the stakeholders and the citizens. The Grievance response system will be established before the project implementation. The GRM will be accessible and understandable for all stakeholders in the project.

Objectives and Scope of the GRM:

The GRM is used as a tool for early identification, assessment, and resolution on any complaints or disputes on the activities and physical investment in the sub-project. The overall objective of the GRM is to ensure that the complaints and grievances from all stakeholders and affected people are handled in a systematic and transparent manner.

The overall objectives of the GRM are the following:
-To allow stakeholders the opportunity to lodge complaints and raise concerns.
-To ensure that comments, responses, and grievances are handled in a fair, transparent, and systematic manner, in line with the applicable reference framework.
-To mitigate or prevent adverse impacts on communities caused by the Project operations.
-To serve as an early alert system to project management of significant or recurring issues that might signal a systemic problem, and facilitate a solution; and
-To achieve improved service delivery in municipal services whereby citizens have strong ownerships, participation, and get fair benefits from the sustainable utilization of such services.

To achieve the above objectives, a focal person will act as the Grievance officer to ensure that all grievances are handled in a structured manner.

- **Assigning the Role of a Focal Person as the Grievance Officer**
  The Focal Person from the District Council will be assigned as the Grievance Officer who will be responsible for receiving and following-up complaints through a structured process. The Social and Resettlement Officer shall be given the responsibility as the Grievance Officer for coordinating the regular functioning and implementation of the GRM. The Grievance officer will report to the Project Director in the PIU.

- **Receiving, Logging, and Acknowledging the complaint/grievance**
  As part of the GRM, the grievances from the stakeholders or their representatives may be communicated verbally (in person or over a telephonic conversation) or in written form. All grievances communicated in any of these mediums shall be recognized and recorded. Once the grievance is recorded, a grievance number shall be allocated and communicated to the aggrieved. In case the grievance is assessed to be out of the scope of the GRM, a communication towards the same shall be made to the complainant, and an alternative mode of redress shall be suggested. As part of this acknowledgement a tentative timeline for the redress of the grievances shall be identified, in keeping with the GRM process. This acknowledgement shall be provided on the same day as the grievance is received.

  A grievance log (or register) can be used to analyze information about grievance and conflict trends, community issues, and project operations to anticipate the kinds of conflicts that might be expected in the future, both to ensure that the grievance mechanism is set up to handle such issues and to propose organizational or operational changes.

- **Initial Review, Examine, and Investigate the complaint/grievance**
  Once the grievance is received and recorded, the Grievance Officer shall identify the District Council, contractor or personnel responsible for resolving the grievance. The

Grievance Officer and concerned department shall then undertake an enquiry into the specifics of the grievance. Depending on the sensitivity of the issue, a site inspection can be undertaken to check the validity and severity of the grievance. For this purpose, the Grievance Officer will also undertake discussions with the aggrieved concerned and external stakeholders. The inspection will be undertaken within three days of receiving the grievance.

- **Resolve or escalate the complaint/grievance**
  Based on the case investigation, the grievance officer, in consultation with the concerned departments, shall identify a suitable resolution to the issue. In case the issue is beyond the purview of the official at the town level, it should be escalated to the district level. If, however, the district level official is not able to identify an adequate resolution for the grievance, s/he may choose to ask for an escalation of the grievance to the Grievance Redress Committee (GRC). The Grievance Officer will forward the grievance to GRC. The GRC will endeavor to resolve the grievance within 21 working days.

- **Close and Prepare outcome reports**
  The records of the grievance register shall be updated every working week with the present status of the grievance. Once the grievance is resolved, and the same has been communicated to the complainant, the grievance shall be closed in the grievance register. The Grievance Officer will update the Complaint/Grievance Register on a weekly basis to indicate resolved (closed-out) and unresolved cases, those pending with the Grievance Committee or with courts. The Grievance Officer will ensure that the status of all complaints/grievances is kept current and will brief the Project Director on a weekly basis on the status of all current complaints/grievances. On a monthly basis, the Grievance Officer will produce a summary status report that defines trends in the types of complaints and sends this report to the Project Director or other relevant officials.

GRM Structure:

The proposed GRM will have a clear structure where complaints/grievances will be addressed at three different levels. It will take one of the following three processes:

- Those that can be resolved directly at the town level between the Executive Engineer of the District Council, and the aggrieved party (first order mechanism)
- Those that are referred to the district level to the Superintendent Engineer member of the GRC (second order mechanism)
- Those that are referred to the head office (third order mechanism)

All complaints will be received through the following channels/mediums:

- A phone call and/or designated email address to the Customer Office
- By post to the Executive Engineer of the District Council
- During the visit of the Sub Engineer to the respective communities
- A phone call and/or designated email address to the Head Office

First Order Mechanism:
The first order mechanism is receiving the grievance at the town level, which will be handled by the Executive Engineer of the District Council.

- Each complainant will receive a Grievance Acknowledgement Form which acknowledges that the grievance has been received. The Grievance Acknowledgement Form has a reference number and includes a commitment from the Executive Engineer to

provide a response within three days of logging the grievance.

- The recorded complaint is verified on the ground, if it is valid and relevant to the sub-project, then the focal point will discuss it with relevant parties for follow-up;
- The Executive Engineer will depute sub-engineer to contact and if required meet with the Complainant to discuss his/her grievance and visit the site if required.
- If possible, the concerned official will address the complaint in a face-to-face discussion, providing information or clarification (but still document the grievance/complaint). The focus of resolving the complaint will be engagement and dialogue.
- In the case of a grievance, where further action or more time is required, the Executive Engineer will mention the timeline when further action will take place. The Executive Engineer's Office will inform the complainant about the timeline of further action.
- If the problem not resolved at the Executive Engineer's level or a grievance is beyond its authority it will be escalated to the second level order.
- Solved complaints will be recorded and unsolved complaints will be directed to the second order mechanism.

Second Order Mechanism:

If the aggrieved person is not satisfied with the outcome of initial stage consideration, or if town level review is unable to reach a proposed solution, the aggrieved person can refer the issue to the Superintendent Engineer (SE) at the district level. The SE will follow the same process as described in the First Order Mechanism. In case the complainant is still dissatisfied with the mediation by the SE, the grievance will be referred to the GRC. The Grievance Officer keeps a record of all complaints referred to the GRC including a description of issues raised and the outcome of the review process.

Third Order Mechanism:

Those issues which were not resolved directly at the SE level will be sent to the Grievance Redress Committee with PIU representation. In the event that a grievance is escalated to the Third Order mechanism, the Project Director will sign off that the appropriate measures have been taken to resolve the grievance through the First and Second Order Mechanisms. However, if there is a possibility that the complainant is not satisfied with the final decision given by the GRC, then the following measures can be undertaken:

- The complainant can contact the Grievance Officer in the first instance to seek further clarification if for any reason he/she is dissatisfied with the explanation of the review.
- The GRC, if found necessary, will further review the grievance by themselves or appoint their nominees.
- In the event that a case is referred to the GRC, the Grievance Officer will report about the status of the case on a bi-weekly basis to the Project Director when the Implementing Agency (IA) and complainant decide together that the procedures are not acceptable to each other for the situation of the concern.
- The GRC will aim to resolve concerns promptly, in an impartial, understandable and transparent process tailored to the specific community, and at no cost or without retribution to the complainant.

Finally, if the complainant is not satisfied with the outcome presented or by the explanation of the Grievance Committee's review, then the complainant has the right to appeal to any recognized institution open to any citizen as stipulated by the laws of Pakistan.

Grievance Redress Committee:

The Grievance Redress Committee will be established at the Head Office level, where it will be created through an official notification issued by the Chairman of the District Council. The GRC will be mandated to deal with all types of grievances arising at the community level. The GRC members include: Project Director as the Chair, the Social Development Officer, the Gender Officer, In-charge Compliant Cell, a senior social safeguard specialist from a supervisory consultant, and a member nominated from a civil society organization.

The Grievance Redress Committee will also have a GRC Secretary, who will be responsible for managing a lot of the Committee's matters. The Social Safeguard Specialist will act as the GRC Secretary and will have the following responsibilities:

- Facilitate the meetings, and provide information to GRC members
- Document/record the GRC meeting's proceedings, decisions, and recommendations
- Maintain all documents, reports, and meeting attendance
- Facilitate site inspections
- Liaise with the GRC chairperson
- Arrange all payments related to GRC operations
- Provide feedback to PAP and Project Directors, and report back to the Project Director

For the purpose of the GRC meetings, the GRC will have the right to request for more technical staff and project members to attend the meetings to provide more information The GRM members will be qualified and experienced who have the respect and confidence of the affected communities. It is also important to maintain a gender balance within the GRC and to ensure representation of women.

Handling of Specific Sub-project Related Issues:

Management of all construction-related complaints will be the contractor's responsibility under the contract with the Implementing Agency (IA). These types of complaints are included in the Social Management Plan (SMP) and include issues that are related to dust, air quality, soil erosion, damage to surroundings, etc.

To address Gender-Based Violence (GBV) related complaints, the Project will make certain there is a GBV-sensitive GRM available with multiple channels to address a complaint. The social and gender specialist in the PIU will be the focal person for handling all GBV-related allegations, including assessment of the nature of the complaint and seeking support from other service providers if necessary. The PIU will have specific procedures in place for maintaining the confidentiality of such complaints received.

EMERGENCY CONTACTS

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Annex I: Sindh Environmental Quality Standards (SEQS)

Sindh Environmental Quality Standard for Ambient Air			
Pollutant	**Time-weighted average**	**Concentration in Ambient Air**	**Method of measurement**
Sulfur Dioxide (SO2)	Annual Average*	80 µgm^3	Ultraviolet Fluorescence Method
	24 hours**	120 µgm^3	
Oxides of Nitrogen as (NO)	Annual Average*	40 µgm^3	Gas Phase Chemiluminescence
	24 hours**	40 µgm^3	
Oxides of Nitrogen as (NO2)	Annual Average*	40 µgm^3	Gas Phase Chemiluminescence
	24 hours**	80 µgm^3	
O3	1 hour	130 µgm^3	Non dispersive UV absorption method
Suspended Particulate Matter (SPM)	Annual Average*	360 µgm^3	High volume Sampling, (Average flow rate not less than 1.1m^3/minute)
	24 hours**	500 µgm^3	
Respirable Particulate Matter (PM10)	Annual Average*	120 µgm^3	B Ray absorption method
	24 hours**	150 µgm^3	
Respirable Particulate Matter (PM2.5)	24 hours**	75 µgm^3	B Ray absorption method
Lead (Pb)	Annual Average*	1 µgm^3	ASS Method after sampling using EPM 2000 or equivalent Filter paper
	24 hours**	1.5µgm^3	
Carbon Monoxide (CO)	8hours**	5mg/m^3	Non Dispersive Infra Red (NDIR) method
	1hours	10mg/m^3	

Note:
**Annual arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.*
******24 hourly / 8 hourly values should be met 98% of the in a year. 2% of the time, it may exceed but not on two Consecutive days.

Sindh Environmental Quality Standard for Noise			
S. No.	Category of Area / Zone	Effective from 1st January, 2015	
		Limit it in dB(A) Leq*	
		Day Time	Night Time
1	Residential area (A)	65	50
2	Commercial area (B)	70	60
3	Industrial area (C)	80	75
4	Silence Zone (D)	55	45
Note:			
1	Day time hours: 6.00 a.m. to 10.00 p.m.		
2	Night time hours: 10.00 p.m. to 6.00 p.m.		
3	Silence zone; Zone which are declared as such by competent authority. An area comprising not less than 100 meters around hospitals, educational institutions and courts.		
4	Mixed categories of areas may be declared as one of the four above-mentioned categories by the competent authority.		
*dB(A) Leq	Time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.		

Sindh Environmental Quality Standard for Municipal & Liquid Industrial Effluents					
S. #	**Parameter**	**Into Inland**	**Into Sewage**	**Into Sea**	**Unit**
1	Temperature or Temp. increase	<3	<3	<3	^{O}C
2	pH value (H^+)	6-9	6-9	6-9	
3	Biological Oxygen Demand (BOD)5 at $20^{O}C$	80	250	80	mg/l
4	Chemical Oxygen Demand (COD)	150	400	400	mg/l
5	Total Suspended Solids (TSS)	200	400	200	mg/l
6	Total Dissolved Solids (TDS)	3500	3500	3500	mg/l
7	Oil and Grease	10	10	10	mg/l
8	Phenolic Compounds (as Phenol)	0.1	0.3	0.3	mg/l
9	Chloride (as Cl^-)	1000	1000	SC	mg/l
10	Fluoride (as F^-)	10	10	10	mg/l
11	Cyanide (as CN^-)total	1.0	1.0	1.0	mg/l
12	An-ionic detergents (as MBAS)	20	20	20	mg/l
13	Sulphate(SO_4^{2-})	600	1000	SC	mg/l
14	Sulphide (S^{2-})	1.0	1.0	1.0	mg/l
15	Ammonia (NH_3)	40	40	40	mg/l
16	Pesticides	0.15	0.15	0.15	mg/l
17	Cadmium	0.1	0.1	0.1	mg/l
18	Chromium (trivalent and hexavalent)	1.0	1.0	1.0	mg/l
19	Copper	1.0	1.0	1.0	mg/l
20	Lead	0.5	0.5	0.5	mg/l
21	Mercury	0.01	0.01	0.01	mg/l
22	Selenium	0.5	0.5	0.5	mg/l
23	Nickel	1.0	1.0	1.0	mg/l
24	Silver	1.0	1.0	1.0	mg/l
25	Total toxic metals	2.0	2.0	2.0	mg/l
26	Zinc	5.0	5.0	5.0	mg/l
27	Arsenic	1.0	1.0	1.0	mg/l
28	Barium	1.5	1.5	1.5	mg/l
29	Iron	8.0	8.0	8.0	mg/l
30	Manganese	1.5	1.5	1.5	mg/l
31	Boron	6.0	6.0	6.0	mg/l
32	Chlorine	1.0	1.0	1.0	mg/l

The Motor Vehicle Noise (SEQS)		
Parameter	**Standards (maximum permissible limit)**	**Measuring method**
Noise	85dB(A)	Sound-meter at 7.5meter from the source

Sindh Environmental Quality Standards for Drinking Water (mg/l)		
S.#	**Properties / Parameters**	**Standard Values for Pakistan**
	Bacterial	
1	All water intended for drinking (E. coli or Thermo tolerant Coliform bacteria)	Must not be detectable in any 100 ml sample
2	Treated water entering the distribution system (E. coli or thermo tolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml sample
3	Treated water in the distribution system (E. coli or thermo tolerant coliform and total coliform bacteria)	Must not be Detectable in any 100 ml sample. In case of large supplies, where sufficient samples are examined, must not be present in 95% of the samples taken throughout any 12 month period 12 month period.

Sindh Environmental Quality Standards for Drinking Water (mg/l)		
S.#	**Properties / Parameters**	**Standard Values for Pakistan**
	Physical	
4	Color	< 15 TCU
5	Taste	Non objectionable/ Acceptable
6	Odor	Non objectionable/ Acceptable
7	Turbidity	< 5 NTU
8	Total Hardness as $CaCO_3$	< 500 mg/l
9	TDS	<1000
10	pH	6.5-8.5
	Chemical-Essential Inorganics (mg/liter)	
11	Aluminum (Al) mg/l	≤ 0.2
12	Antimony (Sb)	≤ 0.005
13	Arsenic (As)	≤ 0.05
14	Barium (Ba)	0.7
15	Boron (B)	0.3
16	Cadmium (Cd)	0.01
17	Chloride (Cl-)	< 250
18	Chromium (Cr)	≤ 0.05
19	Copper (Cu)	2
	Chemical -Toxic Inorganics (mg/liter)	
20	Cyanide (CN)-	≤ 0.05
21	Fluoride (F)	≤ 1.5
22	Lead (Pb)	≤ 0.05
23	Manganese (Mn)	≤ 0.5
24	Mercury (Hg)	≤ 0.001
25	Nickel (Ni)	≤ 0.02
26	Nitrate (NO_3)-	≤ 50
27	Nitrite (NO_2)-	≤ 3
28	Selenium (SE)	≤ 0.01
29	Residual Chlorine	0.2-0.5 At consumer end 0.5-1.5 at source
30	Zinc (Zn)	5.0
	Chemical-Organic (mg/L)	
31	Phenolic compounds	<0.0002
	Radioactive	
32	Alpha Emitters bq/L	0.1
33	Beta emitters	1

Annex J: AED Certificate

OFFICE OF THE DEPUTY COMMISSIONER DISTRICT MALIR KARACHI.

No. DC/M/Rev.Br./K/5518 /2021, Karachi, dated 20/ 10 /2021.

SAY NO TO CORRUPTION

CERTIFICATE

This is to certify that the there is no any encroachment drive reported to be carried out in respect of mentioned below projects.

SR NO.	Name of Scheme & Estimate Cost
1.	P/L of sewerage line at Dumba Got UC Konkar, SD Murad Memon, District Council Karachi.
2.	P/L of sewerage line from Dawood Shoro Goth to SukkhanNadi via Shah Lateef 19-B UC 25 Razzakabad Bin Qasim Division District Council Karachi.
3.	Construction of metalled road from paka sarak to Baloch Mohala, Brohi, UC Malh-10 & CC Pavor / check tiles flooring at Shafi Mohammad Mohia, Abdul Karim Mohla, Abdul Karim Mohala, UC Murad Memon-II, SD Murad Memon, District Council Karachi.

This certificate issued in response to letter No. DCK/Administrator/ 20 /2021, dated 15-10-2021.

Zaalli 20-10-21

ADDL: DEPUTY COMMISSIONER-I
DISTRICT MALIR KARACHI

Copy for information to: -
1. Master File 2021.

Annex K: Environmental Monitoring and Testing Reports

EPA Certificate No : EPA/LAB/Certificate-13 (SEPA-2014)

NOISE EXPOSURE TEST REPORT

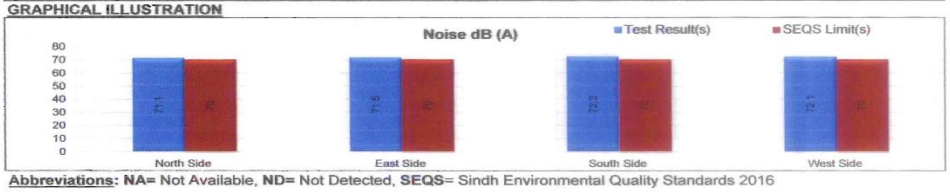
Ref. No. AMT/EA/OCT-21/ENV-0678/JR-0916 **Report No.** AMT/EA/OCT-21/AQ/AL-04413

Client Name	E.A Consulting Private Limited		
Client Address	P/L of Sewerage line From Dawood Shoro Ghoth,Shah Latif 19-B UC-25,Razzak Abad Bin Qasim Division		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sampling Date	5-Nov-21	**Reporting Date**	6-Nov-21
LOCATION DETAILS			
Sampling Area	Sampling Point 1 at Sub-Project Location	**Sampling Type**	Grab Sample
Coordinates	24°51'57"N 67°15'45"E	**Testing Time**	Real Time (Noise Monitoring)

TEST RESULTS

S.No	Parameter(s)	Unit(s)	Methodology	Sampling Area	Test Result(s)	SEQS Limit(s)
1	Noise background (daytime)	dB (A)	ASTM E-1124	North Side	71.1	70
2				East Side	71.5	70
3				South Side	72.3	70
4				West Side	72.1	70

GRAPHICAL ILLUSTRATION



Abbreviations: **NA=** Not Available, **ND=** Not Detected, **SEQS=** Sindh Environmental Quality Standards 2016

Note:

Limit mention on bases of commercial area as per SEQS
Day Time Hours: 6:00 a.m to 10:00 p.m
The values represent sample conditions when monitoring /testing was carried out
The report is not valid for court evidence/judicial knowledge

Sample Analysed by
(Field Analyst)

Reviewed by
Dr. Ishrat ullah Siddiqui

Repudiation: This report is not valid for any judicial use and free from all claims. All test results and report is valid for the time of sampling (as per mentioned date) and particular sample (as per descriptions given by client). Maximum possible safety measure are applied but Aims Tec (pvt) Ltd. doesn't undertake any liability for the scope of methodology used, accuracy and validity of results, which may influence by any unavoidable factors. In case of any query, must contact within a week from the reporting date. After one week of work execution your query will not be entertained.

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Cell: +92-321-922-1123
URL: www.aimstec.com.pk
Email: info@aimstec.com.pk / operation.aimstec@gmail.com

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SEPA APPROVED CERT NO. 13

EPA Certificate No : EPA/LAB/Certificate-13 (SEPA-2014)

NOISE EXPOSURE TEST REPORT

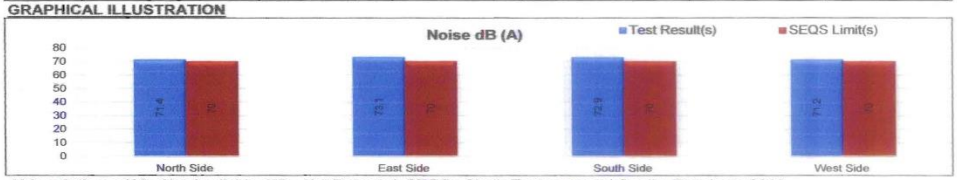
Ref. No. AMT/EA/OCT-21/ENV-0678/JR-0916 **Report No.** AMT/EA/OCT-21/AQ/AL-04415

Client Name	E.A Consulting Private Limited		
Client Address	P/L of Sewerage line From Dawood Shoro Ghoth,Shah Latif 19-B UC-25,Razzak Abad Bin Qasim Division		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sampling Date	6-Nov-21	**Reporting Date**	7-Nov-21
LOCATION DETAILS			
Sampling Area	Sampling Point 2 at Sub-Project Location	**Sampling Type**	Grab Sample
Coordinates	24°51'32.6"N 67°16'09.8"E	**Testing Time**	Real Time (Noise Monitoring)

TEST RESULTS

S.No	Parameter(s)	Unit(s)	Methodology	Sampling Area	Test Result(s)	SEQS Limit(s)
1	Noise background (daytime)	dB (A)	ASTM E-1124	North Side	71.4	70
2				East Side	73.1	70
3				South Side	72.9	70
4				West Side	71.2	70

GRAPHICAL ILLUSTRATION



Abbreviations: NA= Not Available, **ND=** Not Detected, **SEQS**= Sindh Environmental Quality Standards 2016

Note:

Limit mention on bases of commercial area as per SEQS
Day Time Hours: 6:00 a.m to 10:00 p.m
The values represent sample conditions when monitoring /testing was carried out
The report is not valid for court evidence/judicial knowledge

Sample Analysed by
(Field Analyst)

Reviewed by
Dr. Ishrat ullah Siddiqui

Repudiation: This report is not valid for any judicial use and free from all claims. All test results and report is valid for the time of sampling (as per mentioned date) and particular sample (as per descriptions given by client). Maximum possible safety measure are applied but Aims Tec (pvt) Ltd. doesn't undertake any liability for the scope of methodology used, accuracy and validity of results, which may influence by any unavoidable factors. In case of any query, must contact within a week from the reporting date. After one week of work execution your query will not be entertained.

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EPA Certificate No : EPA/LAB/Certificate-13 (SEPA-2014)

AIR QUALITY MONITORING TEST REPORT

Ref. No. AMT/EA/OCT-21/ENV-0678/JR-0916 **Report No. AMT/EA/OCT-21/AQ/AL-04412**

Client Name	E.A Consulting Private Limited		
Sampling Location	P/L of Sewerage line From Dawood Shoro Ghoth,Shah Latif 19-B UC-25,Razzak Abad Bin Qasim Division		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sampling Date	5-Nov-21	**Sampling End Date**	6-Nov-21

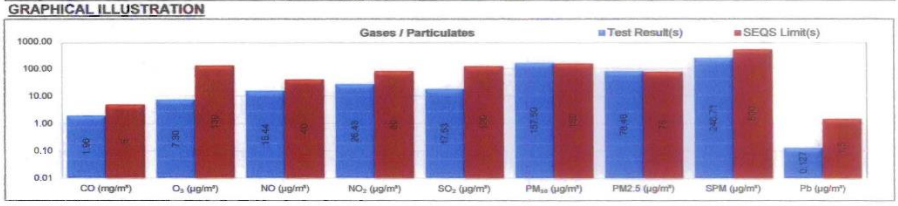
LOCATION DETAILS

Sampling Area	Sampling Point 1 at Sub-Project Location	**Sampling Type**	24 hours
Coordinates	24°51'57"N 67°15'45"E	**Sampling Start Time**	9:30 AM

TEST RESULTS

S.No	Parameter(s)	Unit(s)	Methodology	Test Result(s)	SEQS Limit(s)
1	Carbon Monoxide	CO (mg/m³)	Non Dispersive Infrared Method	1.96	5
2	Ozone	O_3 (µg/m³)	ASTM D-5156	7.30	130
3	Oxides of Nitrogen	NO (µg/m³)	ASTM D-1607	15.44	40
4	Nitrogen Dioxide	NO_2 (µg/m³)	ASTM D-3608	26.43	80
5	Sulphur Dioxide	SO_2 (µg/m³)	ASTM D-2914	17.63	120
6	Particulate Matter (10-Microns)	PM_{10} (µg/m³)	PM Analyzer (Laser Diode)	157.50	150
7	Particulate Matter (2.5-Microns)	$PM_{2.5}$ (µg/m³)	PM Analyzer (Laser Diode)	78.46	75
8	Particulate Matter (suspended)	SPM (µg/m³)	PM Analyzer (Laser Diode)	246.71	500
9	Lead	Pb (µg/m³)	AAS Method (EPM Filter paper)	0.127	1.5

GRAPHICAL ILLUSTRATION



Abbreviations: **NA**= Not Available, **ND**= Not Detected, **SEQS**= Sindh Environmental Quality Standards 2016

Note:

Monitoring Start Time 9:30 AM
Report was recorded after every 1 hour interval at the sub-project site
The values represent actual conditions when monitoring /testing was carried out
The report is not valid for court evidence/judicial knowledge

Sample Analysed by
(Field Analyst)

AIMSTEC (PRIVATE) LIMITED

Reviewed by
Dr. Ishrat ullah Siddiqui

Repudiation: This report is not valid for any judicial use and free from all claims. All test results and report is valid for the time of sampling (as per mentioned date) and particular sample (as per descriptions given by client). Maximum possible safety measure are applied but Aims Tec (pvt) Ltd. doesn't undertake any liability for the scope of methodology used, accuracy and validity of results, which may influence by any unavoidable factors. In case of any query, must contact within a week from the reporting date. After one week of work execution your query will not be entertained.

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EPA Certificate No : EPA/LAB/Certificate-13 (SEPA-2014)

AIR QUALITY MONITORING DETAIL REPORT

Ref. No. AMT/EA/OCT-21/ENV-0678/JR-0916 **Report No. AMT/EA/OCT-21/AQ/AL-04412**

Client Name	E.A Consulting Private Limited		
Sampling Location	P/L of Sewerage line From Dawood Shoro Ghoth,Shah Latif 19-B UC-25,Razzak Abad Bin Qasim Division		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sampling Start Date	5-Nov-21	**Sampling End Date**	6-Nov-21

LOCATION DETAILS

Sampling Area	Sampling Point 1 at Sub-Project Location	**Sampling Type**	24 hours
Coordinates	24°51'57"N 67°15'45"E	**Sampling Start Time**	9:30 AM

TEST RESULTS

S/No	Date	Time	CO (mg/m³)	O_3 (µg/m³)	NO (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	PM_{10} (µg/m³)	PM2.5 (µg/m³)	SPM (µg/m³)	Pb (µg/m³)
1	5-Nov-21	10:30 AM	1.1	3.7	11.2	23.1	14.2	135	65	220	0.09
2	5-Nov-21	11:30 AM	1.2	4.9	12.1	21.6	17.3	149	70	235	0.11
3	5-Nov-21	12:30 PM	1.7	5.2	13.2	25.1	20.1	151	80	250	0.14
4	5-Nov-21	1:30 PM	2.5	8.4	18.2	29.1	21.5	169	81	270	0.19
5	5-Nov-21	2:30 PM	2.9	9.1	19.5	25.4	17.1	180	85	250	0.21
6	5-Nov-21	3:30 PM	2.6	7.1	16.3	27.4	18.4	185	87	260	0.18
7	5-Nov-21	4:30 PM	1.9	6.2	18.1	29.3	19.1	160	89	275	0.17
8	5-Nov-21	5:30 PM	3.2	9.2	21.7	31.2	21.5	191	95	302	0.22
9	5-Nov-21	6:30 PM	3.8	9.1	24.5	35.6	22.1	195	100	310	0.25
10	5-Nov-21	7:30 PM	2.1	9.7	20.9	31.8	20.1	175	90	290	0.21
11	5-Nov-21	8:30 PM	1.9	9.3	16.8	27.1	18.5	180	85	270	0.17
12	5-Nov-21	9:30 PM	2.4	10.1	17.3	23.4	17.3	155	75	235	0.11
13	5-Nov-21	10:30 PM	1.5	9.6	12.9	25.7	13.2	165	77	230	0.1
14	5-Nov-21	11:30 PM	1.4	7.1	11.4	21.3	14.8	150	79	240	0.09
15	6-Nov-21	12:30 AM	1.8	8.6	13.6	23.7	17.2	152	75	225	0.07
16	6-Nov-21	1:30 AM	0.7	4.1	10.7	20.1	16.9	145	73	225	0.06
17	6-Nov-21	2:30 AM	1.1	4.7	9.3	22.4	18.1	148	70	215	0.08
18	6-Nov-21	3:30 AM	1.5	4.2	11.9	24.6	15.7	135	64	220	0.07
19	6-Nov-21	4:30 AM	1.3	6.1	13.2	23.7	14.9	125	70	240	0.05
20	6-Nov-21	5:30 AM	0.9	6.9	14.8	27.8	15.7	130	72	220	0.1
21	6-Nov-21	6:30 AM	1.3	6.3	11.3	26.1	15.9	135	70	245	0.05
22	6-Nov-21	7:30 AM	1.6	7.9	15.3	27.1	14.1	145	74	234	0.07
23	6-Nov-21	8:30 AM	2.7	8.1	17.3	28.6	17.3	155	77	210	0.11
24	6-Nov-21	9:30 AM	3.9	9.5	19.1	33.1	22.1	170	80	250	0.14
MIN			**0.7**	**3.7**	**9.3**	**20.1**	**13.2**	**125**	**64**	**210**	**0.05**
MAX			**3.9**	**10.1**	**24.5**	**35.6**	**22.1**	**195**	**100**	**310**	**0.25**
Average			**1.96**	**7.30**	**15.44**	**26.43**	**17.63**	**157.50**	**78.46**	**246.71**	**0.127**
SEQS Limits			**5**	**130**	**40**	**80**	**120**	**150**	**75**	**500**	**1.5**

Abbreviations: NA= Not Available, **ND=** Not Detected, **SEQS=** Sindh Environmental Quality Standards 2016

Note:

Monitoring Start Time 9:30 AM
Report was recorded after every 1 hour interval at the sub-project site
The values represent actual conditions when monitoring /testing was carried out
The report is not valid for court evidence/judicial knowledge

Sample Analysed by
(Field Analyst)

Reviewed by
Dr. Ishrat ullah Siddiqui

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AIR QUALITY MONITORING TEST REPORT

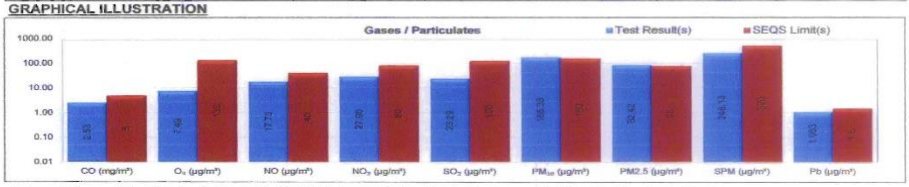
Ref. No. AMT/EA/OCT-21/ENV-0678/JR-0916 **Report No. AMT/EA/OCT-21/AQ/AL-04414**

Client Name	E.A Consulting Private Limited		
Client Address	P/L of Sewerage line From Dawood Shoro Ghoth,Shah Latif 19-B UC-25,Razzak Abad Bin Qasim Division		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sampling Date	6-Nov-21	**Sampling End Date**	7-Nov-21
LOCATION DETAILS			
Sampling Area	Sampling Point 2 at Sub-Project Location	**Sampling Type**	24 hours
Coordinates	24°51'32.7"N 67°16'09.9"E	**Sampling Start Time**	10:15 AM

TEST RESULTS

S.No	Parameter(s)	Unit(s)	Methodology	Test Result(s)	SEQS Limit(s)
1	Carbon Monoxide	CO (mg/m³)	Non Dispersive Infrared Method	2.53	5
2	Ozone	O_3 (µg/m³)	ASTM D-5156	7.49	130
3	Oxides of Nitrogen	NO (µg/m³)	ASTM D-1607	17.73	40
4	Nitrogen Dioxide	NO_2 (µg/m³)	ASTM D-3608	27.90	80
5	Sulphur Dioxide	SO_2 (µg/m³)	ASTM D-2914	23.29	120
6	Particulate Matter (10-Microns)	PM_{10} (µg/m³)	PM Analyzer (Laser Diode)	165.33	150
7	Particulate Matter (2.5-Microns)	$PM_{2.5}$ (µg/m³)	PM Analyzer (Laser Diode)	82.42	75
8	Particulate Matter (suspended)	SPM (µg/m³)	PM Analyzer (Laser Diode)	248.13	500
9	Lead	Pb (µg/m³)	AAS Method (EPM Filter paper)	1.063	1.5

GRAPHICAL ILLUSTRATION



Abbreviations: NA= Not Available, **ND=** Not Detected, **SEQS=** Sindh Environmental Quality Standards 2016

Note:

Monitoring Start Time 10:15 AM
Report was recorded after every 1 hour interval at the sub-project site
The values represent actual conditions when monitoring /testing was carried out
The report is not valid for court evidence/judicial knowledge

Sample Analysed by
(Field Analyst)

Reviewed by
Dr. Ishrat ullah Siddiqui

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Ref. No. AMT/EA/OCT-21/ENV-0678/JR-0916 **Report No.** AMT/EA/OCT-21/AQ/AL-04414

Client Name	E.A Consulting Private Limited		
Sampling Location	P/L of Sewerage line From Dawood Shoro Ghoth,Shah Latif 19-B UC-25,Razzak Abad Bin Qasim Division		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sampling Start Date	6-Nov-21	**Sampling End Date**	7-Nov-21
LOCATION DETAILS			
Sampling Area	Sampling Point 2 at Sub-Project Location	**Sampling Type**	24 hours
Coordinates	24°51'32.7"N 67°16'09.9"E	**Sampling Start Time**	10:15 AM

TEST RESULTS

S/No	Date	Time	CO (mg/m³)	O_3 (µg/m³)	NO (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	PM_{10} (µg/m³)	PM2.5 (µg/m³)	SPM (µg/m³)	Pb (µg/m³)
1	6-Nov-21	11:15 AM	1.3	4.1	10.9	23.1	18.6	135	70	210	1.1
2	6-Nov-21	12:15 PM	1.7	4.3	11.5	24.7	19.4	140	77	220	1.3
3	6-Nov-21	1:15 PM	2.1	5.1	13.6	25.3	20.6	145	73	222	1.05
4	6-Nov-21	2:15 PM	2.9	5.9	16.2	26.9	21.1	160	80	235	1.07
5	6-Nov-21	3:15 PM	3.1	6.4	18.6	28.5	24.1	175	82	260	1.09
6	6-Nov-21	4:15 PM	3	6.9	19.4	29.8	25.9	160	83	245	1.03
7	6-Nov-21	5:15 PM	2.9	6.1	21.9	27.1	23.7	180	90	263	1.14
8	6-Nov-21	6:15 PM	3.7	11.2	13.7	33.6	28.4	185	95	270	1.13
9	6-Nov-21	7:15 PM	4.3	14.7	24.6	36.1	30.6	188	97	290	1.19
10	6-Nov-21	8:15 PM	3.7	13.1	23.9	33.7	28.2	191	100	295	1.2
11	6-Nov-21	9:15 PM	3.1	12.3	24.6	32.3	27.9	178	90	270	1.16
12	6-Nov-21	10:15 PM	3.2	10.5	22.1	29.7	26.8	175	85	255	1.12
13	6-Nov-21	11:15 PM	2.5	9.1	20.1	27.9	24.5	165	90	260	1.05
14	7-Nov-21	12:15 AM	2.3	8.5	19.3	28.8	25.9	170	81	250	1.9
15	7-Nov-21	1:15 AM	1.9	6.4	18.7	26.9	21.7	160	79	245	1.04
16	7-Nov-21	2:15 AM	1.5	6.1	17.2	24.1	19.8	155	80	230	1.02
17	7-Nov-21	3:15 AM	1.1	4.8	14.5	22.4	18.4	150	75	230	1.09
18	7-Nov-21	4:15 AM	1.7	5.1	13.4	23.9	17.3	140	73	225	0.8
19	7-Nov-21	5:15 AM	1.5	4.2	12.7	21.8	16.2	145	72	210	0.7
20	7-Nov-21	6:15 AM	1.7	3.9	11.9	26.2	20.7	160	71	235	0.04
21	7-Nov-21	7:15 AM	1.8	3.7	13.8	27.8	23.8	180	83	261	1.11
22	7-Nov-21	8:15 AM	2.9	5.8	16.1	25.6	21.5	177	80	253	1.03
23	7-Nov-21	9:15 AM	3.1	8.4	22.1	28.3	24.8	184	85	266	1.1
24	7-Nov-21	10:15 AM	3.6	13.2	24.7	35.1	29.1	170	87	255	1.04
MIN			**1.1**	**3.7**	**10.9**	**21.8**	**16.2**	**135**	**70**	**210**	**0.04**
MAX			**4.3**	**14.7**	**24.7**	**36.1**	**30.6**	**191**	**100**	**295**	**1.9**
Average			**2.53**	**7.49**	**17.73**	**27.90**	**23.29**	**165.33**	**82.42**	**248.13**	**1.063**
SEQS Limits			**5**	**130**	**40**	**80**	**120**	**150**	**75**	**500**	**1.5**

Abbreviations: NA= Not Available, **ND=** Not Detected, **SEQS=** Sindh Environmental Quality Standards 2016

Note:

Monitoring Start Time 10:15 AM
Report was recorded after every 1 hour interval at the sub-project site
The values represent actual conditions when monitoring /testing was carried out
The report is not valid for court evidence/judicial knowledge

Sample Analysed by
(Field Analyst)

Reviewed by
Dr. Ishrat ullah Siddiqui

Repudiation: This report is not valid for any judicial use and free from all claims. All test results and report is valid for the time of sampling (as per mentioned date) and particular sample (as per descriptions given by client). Maximum possible safety measure are applied but Aims Tec (pvt) Ltd. doesn't undertake any liability for the scope of methodology used, accuracy and validity of results, which may influence by any unavoidable factors. In case of any query, must contact within a week from the reporting date. After one week of work execution your query will not be entertained.

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URL: www.aimstec.com.pk
Email: info@aimstec.com.pk / operation.aimstec@gmail.com

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EPA Certificate No : EPA/LAB/Certificate-13 (SEPA-2014)

WATER ANALYSIS TEST REPORT

Ref. No. AMT/EA/NOV-21/ENV-0678/JR-0916 **Report No. AMT/EA/NOV-21/DW/WL-0874-A**

Client Name	E.A. Consulting Private Limited		
Sampling Location	P/L of Sewerage line From Dawood Shoro Ghoth,Shah Latif 19-B UC-25,Razzak Abad Bin Qasim Division		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sample Collected / Given by	Aimstec Pvt Ltd	**Sampling Nature**	Drinking Water
Sampling Point	Tap Water	**Sampling Time**	11:00 AM
Sampling Date	5-Nov-21	**Sample Receiving Date**	5-Nov-21
Analysis Completed On	8-Nov-21	**Reporting Date**	9-Nov-21
Sampling Area	Shahzad Solangi	**Coordinates**	24°51'37.7"N 67°16'09.0"E

TEST RESULTS

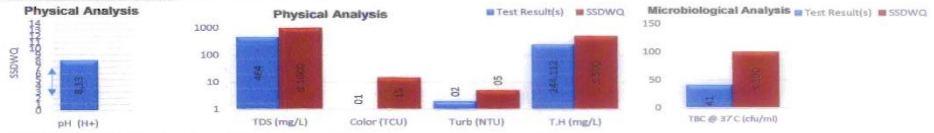
Physical Analysis

S.No	Parameter	Method	Unit	Test Result(s)	SSDWQ
01	pH - Hydrogen ions (onsite)	ASTM D-1293	pH (H^+)	8.13	6.5 to 8.5
02	Total Dissolved Solids	APHA 2540-C	TDS (mg/L)	464	≤ 1000
03	Color	HACH 8025	Color (TCU)	01	15
04	Taste	APHA 2160	Taste (OBJ/ACC)	ACC	(OBJ/ACC)
05	Odor	APHA 2150-A	Odor (OBJ/ACC)	ACC	(OBJ/ACC)
06	Turbidity	HACH 8237	Turb (NTU)	02	05
07	Total hardness as CaCO3	ASTM D-1126	T.H (mg/L)	244.112	≤ 500

Microbiological Analysis

S.No	Parameter	Method	Unit	Test Result(s)	SSDWQ
08	Total Bacterial/Viable Count	APHA 9222-G	TBC @ 37 °C (cfu/ml)	41	≤ 100
09	Total Coliform	APHA 9222-G	T.Coli (cfu/ml)	ND	0/100ml
10	Faecal Coliform	APHA 9222-G	F.Coli (cfu/ml)	ND	0/100ml
11	Escherichia coli	APHA 9222-G	E.Coli (cfu/ml)	ND	0/100ml

GRAPHICAL ILLUSTRATION



Abbreviations: ND= Not Detected, NA= Not Available, BDL= Below Detectable Limit, TCU= True Color Unit, NTU= Nephelometric Turbidity Units, OBJ= Objectionable, ACC= Acceptable

Remark: The Drinking water sample results are within guideline value set by SSDWQ limit.

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Sample Analysed by
(Lab Analyst)

AIMSTEC (PRIVATE) LIMITED

Reviewed by
Dr. Ishrat ullah Siddiqui

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EPA Certificate No : EPA/LAB/Certificate-13 (SEPA-2014)

WATER ANALYSIS TEST REPORT

Ref. No. AMT/EA/NOV-21/ENV-0678/JR-0916 **Report No. AMT/EA/NOV-21/DW/WL-0874-B**

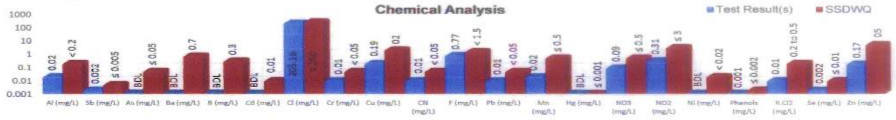
Client Name	E.A. Consulting Private Limited		
Sampling Location	P/L of Sewerage line From Dawood Shoro Ghoth,Shah Latif 19-B UC-25,Razzak Abad Bin Qasim Division		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sample Collected / Given by	Aimstec Pvt Ltd	**Sampling Nature**	Drinking Water
Sampling Point	Tap Water	**Sampling Time**	11:00 AM
Sampling Date	5-Nov-21	**Sample Receiving Date**	5-Nov-21
Analysis Completed On	8-Nov-21	**Reporting Date**	9-Nov-21
Sampling Area	Shahzad Solangi Autos	**Coordinates**	24°51'37.7"N 67°16'09.0"E

TEST RESULTS

Chemical Analysis

S.No	Parameter	Method	Unit	Test Result(s)	SSDWQ
01	Aluminium	PS 1932 : 2002	Al (mg/L)	0.02	< 0.2
02	Antimony	PS 1932 : 2002	Sb (mg/L)	0.002	≤ 0.005
03	Arsenic	APHA 3500-As	As (mg/L)	BDL	≤ 0.05
04	Barium	PS 1932 : 2002	Ba (mg/L)	BDL	0.7
05	Boron	PS 1932 : 2002	B (mg/L)	BDL	0.3
06	Cadmium	HACH 8017	Cd (mg/L)	BDL	0.01
09	Chloride	ASTM D-512	Cl (mg/L)	205.16	≤ 250
09	Chromium	HACH 8022	Cr (mg/L)	0.01	< 0.05
11	Copper	HACH 8506	Cu (mg/L)	0.19	02
12	Cyanide	HACH 8027	CN (mg/L)	0.01	< 0.05
13	Fluoride	HACH 8029	F (mg/L)	0.77	< 1.5
14	Lead	HACH 8033	Pb (mg/L)	0.01	< 0.05
15	Manganese	PS 1932 : 2002	Mn (mg/L)	0.02	≤ 0.5
16	Mercury	PS 1932 : 2002	Hg (mg/L)	BDL	≤ 0.001
17	Nitrate	HACH 8171	NO_3 (mg/L)	0.09	≤ 0.5
18	Nitrite	HACH 8507	NO_2 (mg/L)	0.31	≤ 3
19	Nickel	HACH 8037	Ni (mg/L)	BDL	< 0.02
18	Phenolic compounds	ASTM D-1781	Phenols (mg/L)	0.001	≤ 0.002
20	Residual Chlorine	APHA 4500-Cl	$R.Cl_2$ (mg/L)	0.01	0.2 to 0.5
20	Selenium	HACH 8194	Se (mg/L)	0.002	≤ 0.01
21	Zinc	HACH 8009	Zn (mg/L)	0.17	05

GRAPHICAL ILLUSTRATION



Abbreviations: ND= Not Detected, NA= Not Available, BDL= Below Detectable Limit, TCU= True Color Unit, NTU= Nephelometric Turbidity Units, OBJ= Objectionable, ACC= Acceptable

Remark: The drinking water sample results are within guideline value set by SSDWQ limit.

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Sample Analysed by
(Lab Analyst)

Reviewed by
Dr. Ishrat ullah Siddiqui

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EPA Certificate No : EPA/LAB/Certificate-13 (SEPA-2014)

WATER ANALYSIS TEST REPORT

Ref. No. AMT/EA/OCT-21/ENV-0678/JR-0916 | **Report No. AMT/EA/OCT-21/WW/WL-0875-A**

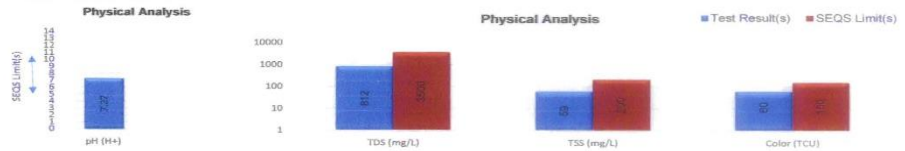
Client name	E.A. Consulting Private Limited		
Sampling Location	P/L of Sewerage line From Dawood Shoro Ghoth,Shah Latif 19-B UC-25,Razzak Abad Bin Qasim Division		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sample collected / given by	Aimstec Pvt Ltd	**Sampling Nature**	Waste Water
Sampling Point	Nala (sewerage)	**Sampling Time**	11:25 AM
Sampling date	5-Nov-21	**Sample receiving date**	5-Nov-21
Analysis completed on	10-Nov-21	**Reporting date**	11-Nov-21
Sampling Area	Masjid Aqsa Marri Mohalla	**Coordinates**	24°51'57.4"N 67°15'46.7"E

TEST RESULTS

Physical Analysis

S.No	Parameter	Method	Unit	Test Result(s)	SEQS Limit(s)
01	Temperature	Digital Thermometer	Temp (C)	25.1	40 ≤ 3°C
02	pH - Hydrogen ions	ASTM D-1293	pH (H+)	7.27	6 To 9
03	Total Dissolved Solids	APHA 2540-C	TDS (mg/L)	812	3500
04	Total Suspended Solids	APHA 2540-D	TSS (mg/L)	59	200
05	Color	HACH 8025	Color (TCU)	60	150

GRAPHICAL ILLUSTRATION



Abbreviations: ND= Not Detected, NA= Not Available, BDL= Below Detectable Limit, TCU= True Color Unit, NTU= Nephelometric Turbidity Units, OBJ= Objectionable, ACC= Acceptable

Remark: The Waste water sample results are within guideline value set by SEQS limit.

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Sample Analysed by
(Lab Analyst)

AIMS TEC (PRIVATE) LIMITED

Reviewed by
Dr. Ishrat ullah Siddiqui

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WATER ANALYSIS TEST REPORT

Ref. No. AMT/EA/NOV-21/ENV-0678/JR-0916 **Report No. AMT/EA/NOV-21/WW/WL-0875-B**

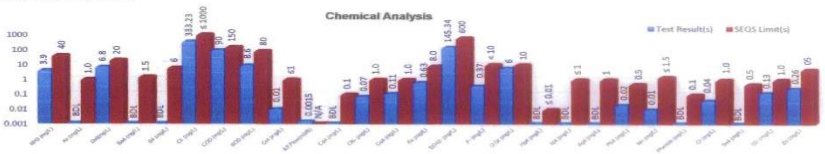
Client name	E.A. Consulting Private Limited		
Sampling Location	P/L of Sewerage line From Dawood Shoro Ghoth,Shah Latif 19-B UC-25,Razzak Abad Bin Qasim Division		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sample collected / given by	Aimstec Pvt Ltd	**Sampling Nature**	WasteWater
Sampling Point	Nullah (sewerage)	**Sampling Time**	11:25 AM
Sampling date	5-Nov-21	**Sample receiving date**	5-Nov-21
Analysis completed on	10-Nov-21	**Reporting date**	11-Nov-21
Sampling Area	Masjid Aqsa Marri Mohalla	**Coordinates**	24°51'57.4"N 67°15'46.7"E

TEST RESULTS

Chemical Analysis

S.No	Parameter	Method	Unit	Test Result(s)	SEQS Limit(s)
01	Amonnia	HACH 13001	NH3 (mg/L)	3.9	40
02	Arsenic	APHA 3500-As	As (mg/L)	BDL	1.0
03	Anionic Detergent	HACH 8028	Det(mg/L)	6.8	20
04	Barium	HACH 8014	Ba^{4} (mg/L)	BDL	1.5
05	Boron	PS 1932 : 2002	B^{4} (mg/L)	BDL	6
06	Chloride	ASTM D-512	Cl^{-} (mg/L)	333.23	≤ 1000
07	Chemical Oxygen Demand	ASTM D-1252	COD (mg/L)	90	150
08	Biochemical Oxygen Demand	APHA 5210	BOD (mg/L)	8.6	80
09	Chromium	HACH 8023	Cr^{6} (mg/L)	0.01	≤ 1
10	Discharge Flow Rate	Flow Meter	Eff.Flow(m3/S)	0.0015	N/A
11	Cadmium	HACH 8017	Cd^{4} (mg/L)	BDL	0.1
12	Cyanide	HACH 8027	CN^{-} (mg/L)	0.07	1.0
13	Copper	HACH 8506	Cu^{4} (mg/L)	0.11	1.0
14	Iron	HACH 8008	Fe (mg/L)	0.63	8.0
15	Sulphate	ASTM D-516	SO_4^{2-} (mg/L)	145.34	600
16	Fluoride	HACH 8029	F^{-} (mg/L)	0.37	< 10
17	Oil and Grease	ASTM D-4281	O.Gr (mg/L)	6	10
18	Mercury	HACH 10065	Hg^{4} (mg/L)	BDL	≤ 0.01
19	Nickel	HACH 8150	Ni^{4} (mg/L)	BDL	≤ 1
20	Silver	Lab Method	Ag^{4} (mg/L)	BDL	1
21	Lead	HACH 8033	Pb^{4} (mg/L)	0.02	0.5
22	Manganese	HACH 8034	Mn (mg/L)	0.01	≤ 1.5
23	Phenolic compounds	ASTM D-1783	Phenols (mg/L)	BDL	0.1
24	Chlorine	HACH 8021	Cl (mg/L)	0.04	1.0
25	Selenium	HACH 8009	Se^{4} (mg/L)	BDL	0.5
26	Sulpide	HACH 8009	S^{2-} (mg/L)	0.13	1.0
27	Zinc	HACH 8010	Zn (mg/L)	0.26	05

GRAPHICAL ILLUSTRATION



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Sample Analysed by
(Lab Analyst)

Reviewed by
Dr. Ishrat ullah Siddiqui

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Annex L: Soil Testing Report

SOILMAT ENGINEERS

B-136, Block-1, Opp. N.E.D. University, Main University Road, Gulistan-e-Jauhar,
Karachi. Ph: 34623161-2, 35458647, Fax: 34632483
E-mail: soilmatengineers@yahoo.com

SME

CLIENT : Competitive and Livable City of Karachi (CLICK)

DATE: 13/11/2021

CONSULTANT: M/s E.A Consulting (Pvt.) Ltd.

PROJECT: ESMP for CLICK Projects

DISTRICT: District Council

Sub Project Location: 2.P/I of Sewerage Line from Dawood Shoro Goth to Sukhan Nadi Via Shah Latif 19-b UC-25, Razzakabad Bin Qasim Division

LAB. NO: 55355

SOIL CLASSIFICATION AS PER AASHTO M-145

S NO.	SAMPLE MARK	SIEVE #	PASSING %	L.L	P.I	SOIL CLASS
		2"	100			
1	Soil Sample # 01	1-1/2"	94.7	N P		A-1-b
	(24-51-32.8, 067-61-10.3)	1"	85.1			
		3/4"	78.1			
		1/2"	76.1			
		3/8"	74.6			
		# 4	71.1			
		# 10	62.9			
		# 40	37.8			
		# 200	19.4			

SOILMAT ENGINEERS SME

The above test results pertain to the sample supplied by the client.

SOILMAT ENGINEERS

B-136, Block-1, Opp. N.E.D. University, Main University Road, Gulistan-e-Jauhar,
Karachi. Ph: 34623161-2, 35458647, Fax: 34632483
E-mail: soilmatengineers@yahoo.com

CLIENT : Competitive and Livable City of Karachi (CLICK)

DATE: 13/11/2021

CONSULTANT: M/s E.A Consulting (Pvt.) Ltd.

PROJECT: ESMP for CLICK Projects

DISTRICT: District Council

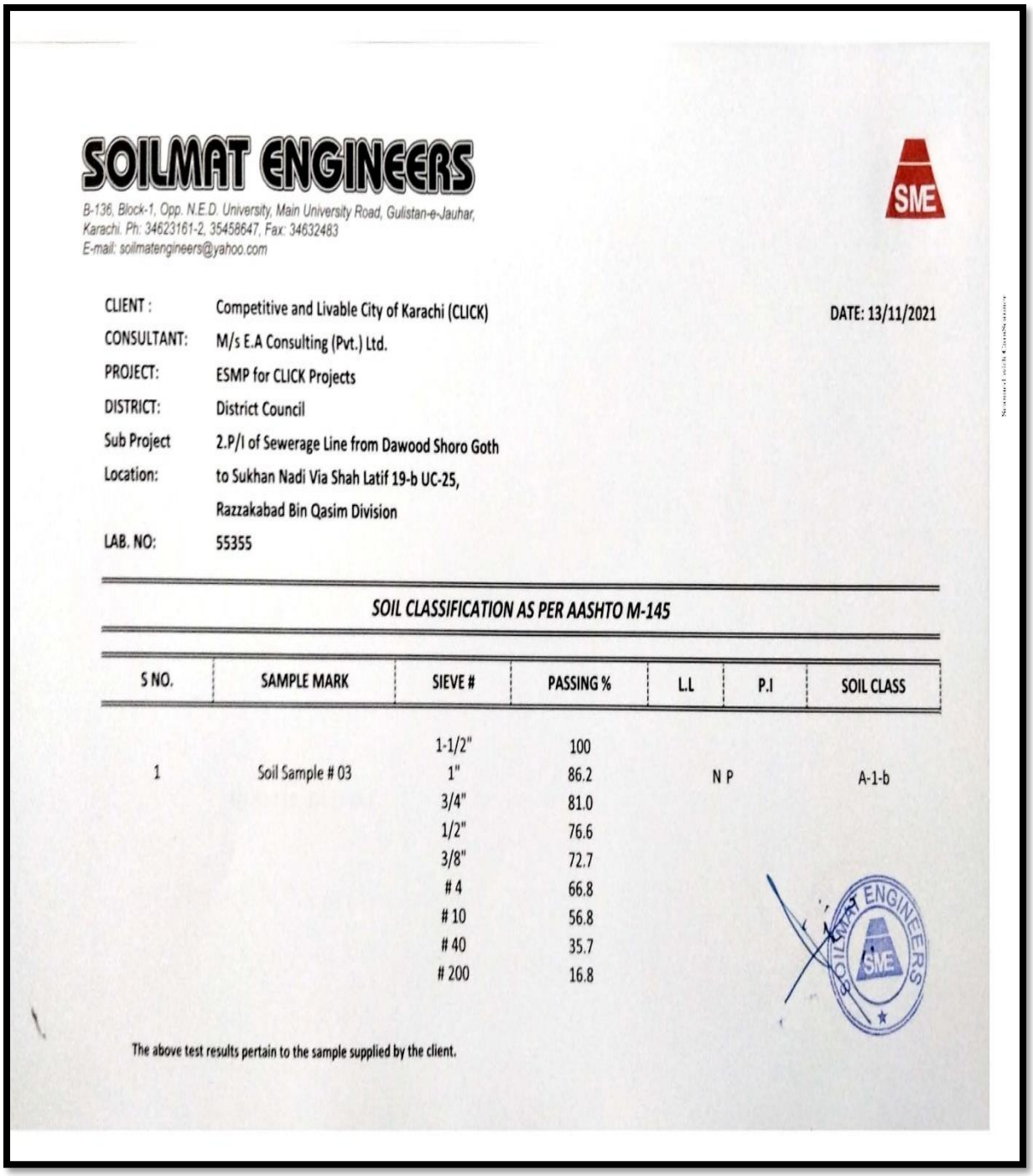
Sub Project Location: 2.P/I of Sewerage Line from Dawood Shoro Goth to Sukhan Nadi Via Shah Latif 19-b UC-25, Razzakabad Bin Qasim Division

LAB. NO: 55355

SOIL CLASSIFICATION AS PER AASHTO M-145

S NO.	SAMPLE MARK	SIEVE #	PASSING %	L.L	P.I	SOIL CLASS
		1-1/2"	100			
1	Soil Sample # 02	1"	93.8	N P		A-2-4
	(24-51-03.1, 067-16-01.6)	3/4"	92.5			
		1/2"	91.3			
		3/8"	89.3			
		# 4	86.6			
		# 10	80.9			
		# 40	59.3			
		# 200	27.6			

The above test results pertain to the sample supplied by the client.



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Karachi. Ph: 34623161-2, 35458647, Fax: 34632483
E-mail: soilmatengineers@yahoo.com

SME

CLIENT : Competitive and Livable City of Karachi (CLICK)

DATE: 13/11/2021

CONSULTANT: M/s E.A Consulting (Pvt.) Ltd.

PROJECT: ESMP for CLICK Projects

DISTRICT: District Council

Sub Project Location: 2.P/I of Sewerage Line from Dawood Shoro Goth to Sukhan Nadi Via Shah Latif 19-b UC-25, Razzakabad Bin Qasim Division

LAB. NO: 55355

SOIL CLASSIFICATION AS PER AASHTO M-145

S NO.	SAMPLE MARK	SIEVE #	PASSING %	L.L	P.I	SOIL CLASS
1	Soil Sample # 03	1-1/2"	100	N P		A-1-b
		1"	86.2			
		3/4"	81.0			
		1/2"	76.6			
		3/8"	72.7			
		# 4	66.8			
		# 10	56.8			
		# 40	35.7			
		# 200	16.8			

SOILMAT ENGINEERS SME

The above test results pertain to the sample supplied by the client.

SOILMAT ENGINEERS

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Karachi. Ph: 34623161-2, 35458647, Fax: 34632483
E-mail: soilmatengineers@yahoo.com

SME

CLIENT : Competitive and Livable City of Karachi (CLICK)

DATE: 13/11/2021

CONSULTANT: M/s E.A Consulting (Pvt.) Ltd.

PROJECT: ESMP for CLICK Projects

DISTRICT: District Council

Sub Project Location: 2.P/I of Sewerage Line from Dawood Shoro Goth to Sukhan Nadi Via Shah Latif 19-b UC-25, Razzakabad Bin Qasim Division

LAB. NO: 55355

SOIL CLASSIFICATION AS PER AASHTO M-145

S NO.	SAMPLE MARK	SIEVE #	PASSING %	L.L	P.I	SOIL CLASS
1	Soil Sample # 04 (24-52-15.0, 067-15-36.3)	1-1/2"	100	N P		A-1-b
		1"	88.3			
		3/4"	84.2			
		1/2"	80.7			
		3/8"	78.9			
		# 4	74.8			
		# 10	63.6			
		# 40	25.3			
		# 200	10.9			

SOILMAT ENGINEERS SME

The above test results pertain to the sample supplied by the client.

SOILMAT ENGINEERS

Geotechnical, Material, Structural Engineers and Testing Laboratories

MOISTURE DENSITY RELATIONSHIP

AASHTO T-180 / ASTM D-1557-78

CLIENT:	Competitive and Livable City of Karachi (CLICK)	**WEIGHT OF MOULD :**	4500
CONSULTANT:	M/s E.A Consulting (Pvt.) Ltd.	**VOLUME OF MOULD:**	2142
PROJECT:	ESMP for CLICK Projects	**LAB. NO.:**	55355
DISTRICT:	District Council		
SUB-PROJECT:	2.P/I of Sewerage Line from Dawood Shoro Goth		
LOCATION:	to Sukhan Nadi Via Shah Latif 19-b UC-25, Razzakabad Bin Qasim Division		
SAMPLE MARK:	Soil Sample # 01, (24-51-32.8, 067-61-10.3)		

Trial No.		1	2	3	4	5
Wt. of Mould & Wet Soil	gm	8851	9178	9421	9557	9604
Wt. of Wet Soil	gm	4351	4678	4921	5057	5104
Wet. Density	gm	2.031	2.184	2.297	2.361	2.383

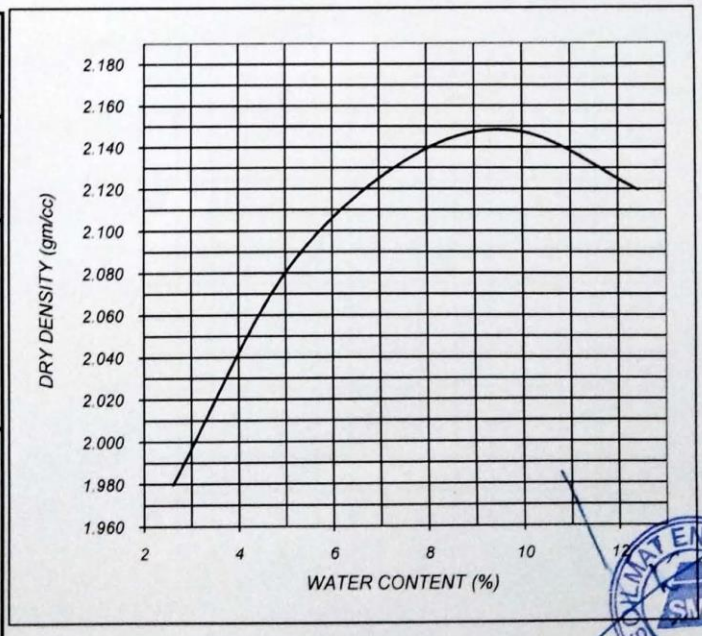
Can No.		G-7	K.K	B3	DC	C-1
Wt. of Wet Soil & Can	gm	362.0	318.0	381.0	357.0	421.0
Wt. of Dry Soil & Can	gm	359.0	312.0	371.0	343.0	401.0
Wt. of Water	gm	3.0	6.0	10.0	14.0	20.0
Wt. of Can	gm	244.0	192.0	240.0	202.0	240.0
Wt. of Dry Soil	gm	115.0	120.0	131.0	141.0	161.0
Water Content	%	2.6	5.0	7.6	9.9	12.4
Dry Density	gm/cc	1.980	2.080	2.134	2.148	2.120

Maximum Dry Density:
2.148 gm/cc

Optimum Moisture Content:
9.4 %

Tested By:
MUZNABEEN
Designation:
SL. TECH:
Date: 18/11/2021

Approved By:
EJAZ SHAH
Designation:
LAB. MANAGER
Date : 18/11/2021



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B-136, Block-1, Opp. N.E.D. University, Main University Road, Gulistan-e-Jauhar, Karachi. Ph: +92-213-4623161 & 62, Fax: +92-213-4632483
E-mail: soilmatengineers@yahoo.com, Web: www.soilmatengineers.com

SOILMAT ENGINEERS

Geotechnical, Material, Structural Engineers and Testing Laboratories

MOISTURE DENSITY RELATIONSHIP

AASHTO T-180 / ASTM D-1557-78

CLIENT:	Competitive and Livable City of Karachi (CLICK)	WEIGHT OF MOULD :	4500
CONSULTANT:	M/s E.A Consulting (Pvt.) Ltd.	VOLUME OF MOULD:	2142
PROJECT:	ESMP for CLICK Projects	LAB. NO.: 55355	
DISTRICT:	District Council		
SUB-PROJECT:	2.P/l of Sewerage Line from Dawood Shoro Goth		
LOCATION:	to Sukhan Nadi Via Shah Latif 19-b UC-25,		
	Razzakabad Bin Qasim Division		
SAMPLE MARK:	Soil Sample # 02, (24-51-03.1, 067-16-01.6)		

Trial No.		1	2	3	4	5
Wt. of Mould & Wet Soil	gm	8515	8773	8983	9086	8983
Wt. of Wet Soil	gm	4015	4273	4483	4586	4483
Wet. Density	gm	1.874	1.995	2.093	2.141	2.093

Can No.		PSL	B2	C-2	C1	GM
Wt. of Wet Soil & Can	gm	320.0	319.0	413.0	392.0	296.0
Wt. of Dry Soil & Can	gm	316.0	310.0	400.0	376.0	280.0
Wt. of Water	gm	4.0	9.0	13.0	16.0	16.0
Wt. of Can	gm	182.0	162.0	256.0	240.0	160.0
Wt. of Dry Soil	gm	134.0	148.0	144.0	136.0	120.0
Water Content	%	3.0	6.1	9.0	11.8	13.3
Dry Density	gm/cc	1.820	1.881	1.920	1.916	1.847

Maximum Dry Density:
1.925 gm/cc

Optimum Moisture Content:
10.2 %

Tested By:
MUZNABEEN
Designation:
SL. TECH:
Date: 18/11/2021

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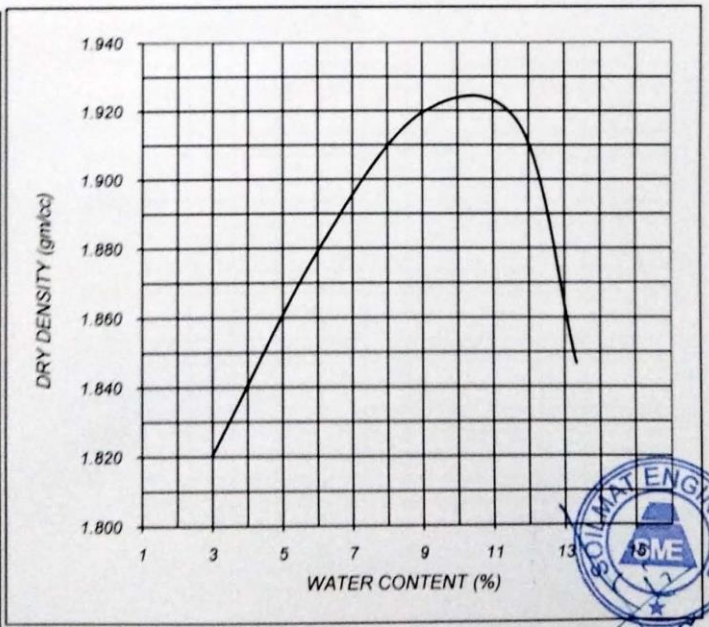
EJAZ SHAH
Designation:
LAB. MANAGER
Date : 18/11/2021



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MOISTURE DENSITY RELATIONSHIP

AASHTO T-180 / ASTM D-1557-78

CLIENT:	Competitive and Livable City of Karachi (CLICK)	**WEIGHT OF MOULD :**	4500
CONSULTANT:	M/s E.A Consulting (Pvt.) Ltd.	**VOLUME OF MOULD:**	2142
PROJECT:	ESMP for CLICK Projects	**LAB. NO.:**	55355
DISTRICT:	District Council		
SUB-PROJECT:	2.P/l of Sewerage Line from Dawood Shoro Goth		
LOCATION:	to Sukhan Nadi Via Shah Latif 19-b UC-25,		
	Razzakabad Bin Qasim Division		
SAMPLE MARK:	Soil Sample # 03		

Trial No.		1	2	3	4	5
Wt. of Mould & Wet Soil	gm	8851	9111	9377	9561	9444
Wt. of Wet Soil	gm	4351	4611	4877	5061	4944
Wet. Density	gm	2.031	2.153	2.277	2.363	2.308

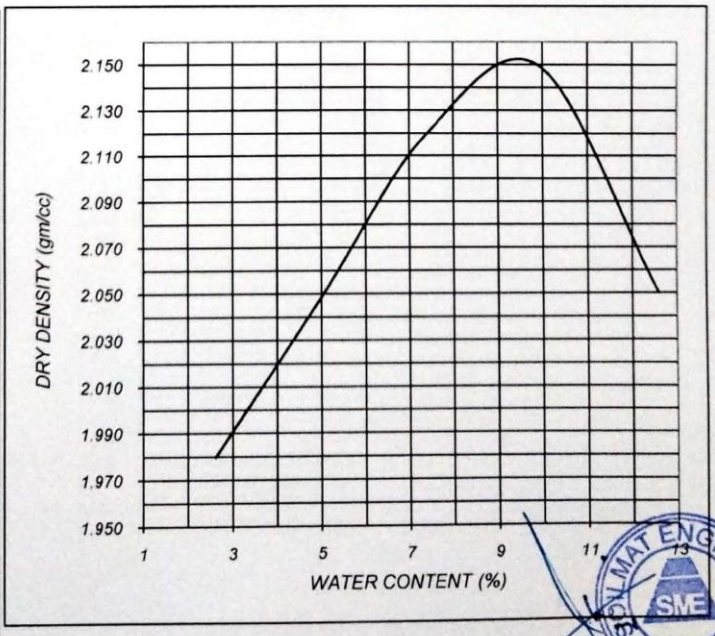
Can No.		Black	B2	PSL	WM	CL
Wt. of Wet Soil & Can	gm	361.0	308.0	356.0	301.0	248.0
Wt. of Dry Soil & Can	gm	357.0	301.0	344.0	287.0	231.0
Wt. of Water	gm	4.0	7.0	12.0	14.0	17.0
Wt. of Can	gm	204.0	162.0	182.0	146.0	96.0
Wt. of Dry Soil	gm	153.0	139.0	162.0	141.0	135.0
Water Content	%	2.6	5.0	7.4	9.9	12.6
Dry Density	gm/cc	1.980	2.049	2.120	2.149	2.050

Maximum Dry Density:
2.153 gm/cc

Optimum Moisture Content:
9.4 %

Tested By:
MUZNABEEN
Designation:
SL. TECH:
Date: 19/11/2021

Approved By:
EJAZ SHAH
Designation:
LAB. MANAGER
Date : 19/11/2021



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SME

MOISTURE DENSITY RELATIONSHIP

AASHTO T-180 / ASTM D-1557-78

CLIENT:	Competitive and Livable City of Karachi (CLICK)	**WEIGHT OF MOULD :**	4500
CONSULTANT:	M/s E.A Consulting (Pvt.) Ltd.	**VOLUME OF MOULD:**	2142
PROJECT:	ESMP for CLICK Projects	**LAB. NO.:**	55355
DISTRICT:	District Council		
SUB-PROJECT:	2.P/I of Sewerage Line from Dawood Shoro Goth		
LOCATION:	to Sukhan Nadi Via Shah Latif 19-b UC-25,		
	Razzakabad Bin Qasim Division		
SAMPLE MARK:	Soil Sample # 04, (24-52-15.0, 067-15-36.3)		

Trial No.		1	2	3	4	5
Wt. of Mould & Wet Soil	gm	8588	9133	9561	9736	9372
Wt. of Wet Soil	gm	4088	4633	5061	5236	4872
Wet. Density	gm	1.908	2.163	2.363	2.444	2.275

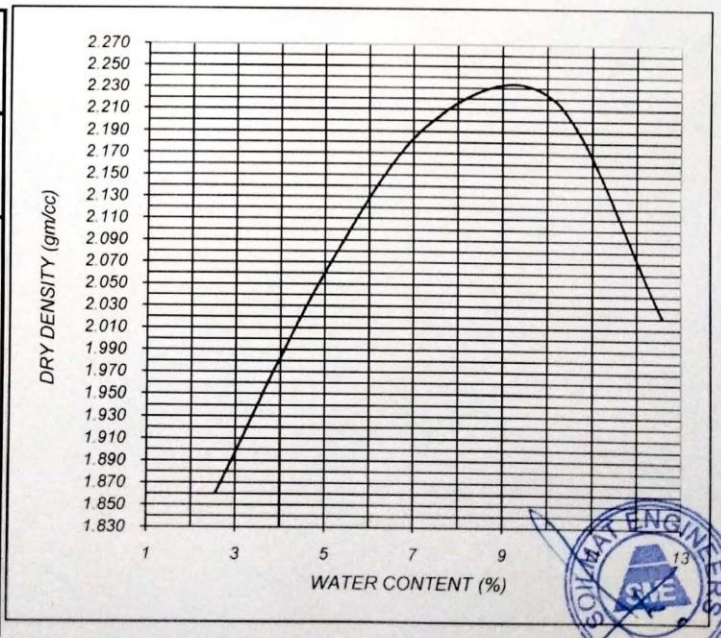
Can No.		K.K	MM	AD	C-2	PC
Wt. of Wet Soil & Can	gm	312.0	315.0	339.0	430.0	363.0
Wt. of Dry Soil & Can	gm	309.0	308.0	328.0	414.0	345.0
Wt. of Water	gm	3.0	7.0	11.0	16.0	18.0
Wt. of Can	gm	192.0	168.0	180.0	256.0	202.0
Wt. of Dry Soil	gm	117.0	140.0	148.0	158.0	143.0
Water Content	%	2.6	5.0	7.4	10.1	12.6
Dry Density	gm/cc	1.861	2.060	2.199	2.220	2.020

Maximum Dry Density:
2.235 gm/cc

Optimum Moisture Content:
9.2 %

Tested By:
MUZNABEEN
Designation:
SL. TECH:
Date: 19/11/2021

Approved By:
EJAZ SHAH
Designation:
LAB. MANAGER
Date : 19/11/2021



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