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

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

"CONSTRUCTION OF METALLED ROAD FROM PAKA SARAK TO BALOCH MOHLA, BROHI MOHLA, UC MALH-10, AND CC PAVER/CHECK TILES FLOORING AT ABDUL KARIM MOHLA AND SHAFI MOHAMMAD MOHLA, UC MURAD MEMON-11, SD MURAD MEMON, DISTRICT COUNCIL KARACHI"

Sub project of District Council Karachi (DCK)

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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
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
SD	:	Sub Division
SEPA	:	Sindh Environmental Protection Agency
SES	:	Socio Economic Survey
SSGC	:	Sui Southern Gas Company
SSO	:	Social Safeguard Officer
CHS	:	Community Health and Safety
OHS	:	Occupational Health & Safety
SSWMB	:	Sindh Solid Waste Management Board
TORs	:	Terms of References
UIPT	:	Urban Immovable Property Tax

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).

Through CLICK, the District Council has identified and proposed a subproject/scheme "Construction of metalled road from Paka Sarak to Baloch Mohla, Brohi Mohla, UC Malh-10, and cc paver/check tiles flooring at Abdul Karim Mohla and Shafi Mohammad Mohla, UC Murad Memon-11, Sd Murad Memon,, Karachi", under the "Minimum Condition" Grant 2020-2021of Component-1 of the project.

The proposed sub project is the main access road from Memon Goth road to Shaheed Zulfiqar Ali Bhutto Law College from College Playground towards Brohi Mohalla towards Jamia mosque subhani. Due to lack of proper periodic repair and maintenance, the road is in a dilapidated condition and there is need for rehabilitation of the existing road and provision of the necessary road furniture and utilities. Therefore its rehabilitation and maintenance will improve access and connectivity of the local community not only to Hanif Shaheed Park / playground but also with the other areas.

Total length of about 1.20 km at Paka Sarak, 0.55 km at Abdul Karim Mohalla and 0.45 km at Shafi Mohammad Mohalla. It serves the educational institutes, shops and houses situated along roads. Presently, a large section of this street does not have proper width for single way traffic and parking. There is no safe pedestrian movement and storm water drains. The street lights have been damaged & non-functional. The road profile is undulated and results in accumulation of water at low spots after a rain.

Considering these requirements for road work and the allied utilities including footpath, street lights, sewerage and storm water drainage and street furniture (road signs & markings), the District Council's planning to restore and rehabilitate the road under the proposed subproject for rehabilitation. The tentative cost of the sub project, is around: PKR. 83.00 million.

The World Bank requires Environmental Assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus improve decision making process. This subproject has triggered the Bank's policy OP 4.01 on Environmental Assessment and World Bank Policy on Access to information 2010. This sub-project ESMP has fulfilled the requirements of the 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). SEPA's NOC will be required for the sub-project against review of Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021.

ESMP report also presents the sub-project's schemes site-specific baseline data collected for physical, biological and socio-economic aspects of environment. The baseline profile has been developed through environmental and social surveys of the existing situation of the sub-

project road and the available secondary data from published literature and previous studies in the sub-project area. The 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 three 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-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.

Noise quality monitoring was also conducted on the three different spots at the sub-project site. Monitoring results are not complying with SEQS limits at the sub-project site.

Ground water quality was collected and tested from the three spots at the sub-project site.

Metaled Road of Paka Sarak: Microbiological, Physical and Chemical parameters of Ground water testing results are complying with SSDWQ limits except the Total Dissolved Solids (TDS), Total Hardness as $CaCO_3$ and Chloride (CL).

Abdul Karim Mohla: Microbiological, Physical and Chemical parameters of Ground water testing results are complying with SSDWQ limits.

Shafi Muhammad Mohla: Microbiological, Physical and Chemical parameters of Ground water testing results are complying with SSDWQ limits except the Total Dissolved Solids (TDS), Total Hardness as $CaCO_3$, Chloride (CL), Chemical Oxygen Demand (COD) and Residual Chlorine at the scheme site.

Wastewater quality testing results are 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 species of *Conocarpus erectus, Prosopis juliflora, Azadirachta indica, Delonix regia* and *Calotropis procera.*

During the Rehabilitation work of sub-project, any trees will not be cut down.

The socio-economic features of the baseline focused on 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 30th 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 for preparation of this ESMP. The outcome of the consultations and the highlighted social considerations are adhered in decision making and in carrying out the sub-project activities.

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

Generally, the relevant stakeholders and public perception about the sub-project is positive. People were found to be aware and convinced and expressed their support and willingness for the implementation of the sub-project.

Minimal to moderate adverse impacts including some noise pollution, dust pollution and associated health and safety concerns for the residential 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 available to alleviate or lessen their potential negative impacts. These impacts are discussed in detail and their mitigation measures and monitoring requirements are also presented in this ESMP which has been designed to address how the proposed measures will be implemented by following the Environmental and Social Management Framework (ESMF) for 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 and Supervision Consultant;
b) Establishes a system of checks and balances;
c) Proposes actions for each player; and
d) Establishes the necessary documentation, communication, and monitoring procedures.

It defines the responsibilities of the PIU, Construction contractor, Independent Monitoring Consultant, Design and Supervision Consultant; develops a system of checks and balances; proposes actions that are to be taken by each role player; and lays down the required documentation, communication, and monitoring procedures. The estimated cost of around PKR.**1,160,000/-** for the implementation of construction stage environmental and social monitoring activities is also given in this ESMP and will be included within the civil works contract for this sub-project**.** The adoption of a proper ESMP will enhance the sustainability of the sub-project.

Chapter 1. INTRODUCTION

1.1. Project Background

Karachi is Pakistan's largest and main seaport city, it is an economic and financial hub of the country. 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 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

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

Component 4 – Technical Assistance for Solid Waste Management (indicative)

1.4. Approved Sub-project

The title of the scheme/sub-project is **"Construction of metalled road from Paka Sarak To Baloch Mohla, Brohi Mohla, UC Malh-10, And CC Paver/Check Tiles Flooring At Abdul Karim Mohla And Shafi Mohammad Mohla, Uc Murad Memon-11, Sd Murad Memon, District Council Karachi".** The sub-project has been identified by District Council Karachi, under the CLICK interventions.

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

The project involves up-gradation and rehabilitation of an existing road and street from Paka Sarak to Baloch mohla, brohi mohla, UC malh-10, and CC Paver/check tiles flooring at Abdul Karim Mohla and Shafi Mohammad Mohla, UC Murad Memon-11, Sub division Murad Memon, District Council Karachi. 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 Sub-projects requires that an Environmental and Social Management Plan (ESMP) needs to be prepared with the sub-project application when the eligible sub-project includes E&S impacts and specific mitigation measures (physical works or management activities). Therefore, Environmental and Social Management Plan (ESMP) is required for "Construction of metalled road from Paka Sarak to Baloch mohla, brohi mohla, UC malh-10, and CC Paver/check tiles flooring at Abdul Karim Mohla and Shafi Mohammad Mohla, UC Murad Memon-11, SD Murad Memon, District Council Karachi".

The ESMP has been prepared by the District Council Karachi using the guidelines provided by the World Bank in the EMF and SMF of CLICK Project 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 road infrastructure and rehabilitation/construction.

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

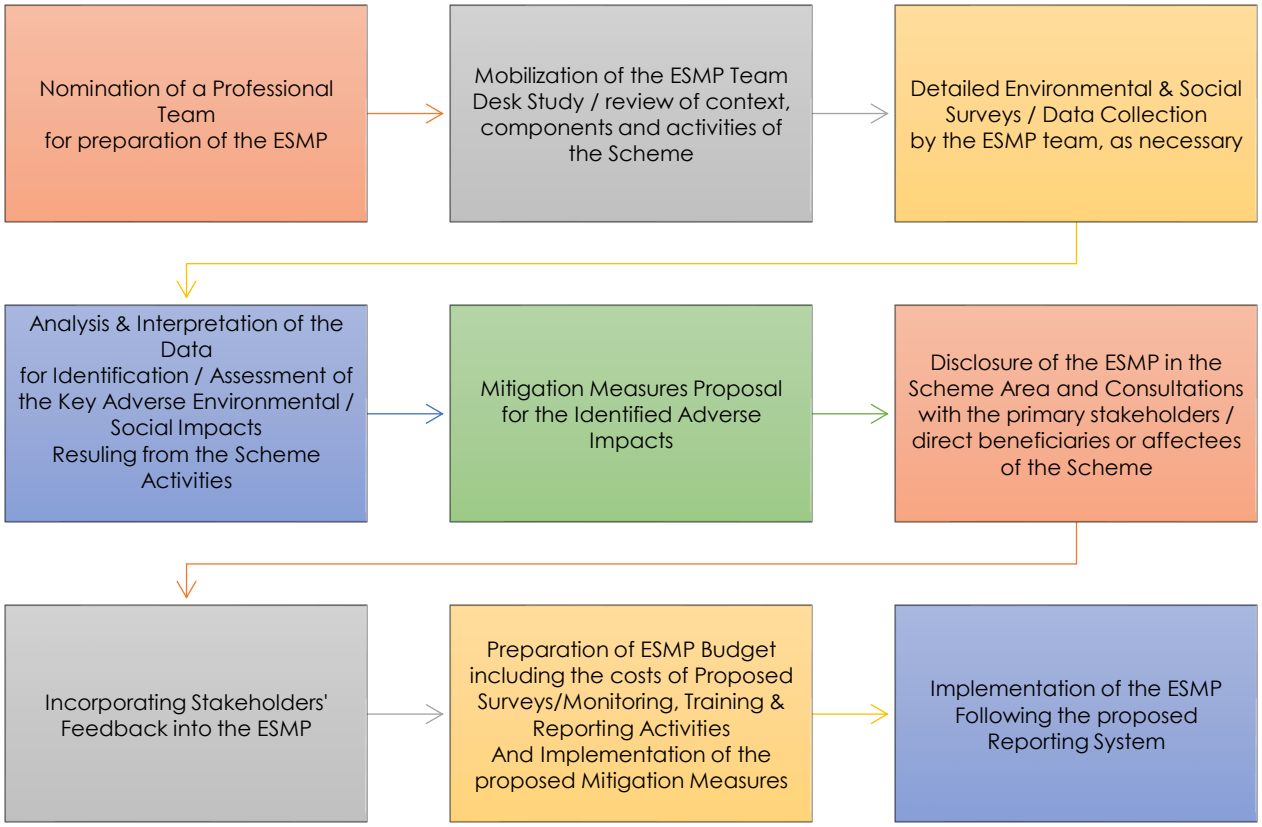
Following the preparation of the Environmental and Social Screening Report (ESR), consultations on the ESMP were held. The comments raised during the consultations, were incorporated in the ESMP before making it a part of the sub-project documents that includes the civil works contract of the sub-project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

2.1. Approach and Methodology

The ESMP presents a comprehensive plan for the effective implementation of environmental and social mitigation measures in connection with the proposed scheme as detailed in the following sections:

Section 1: Introduction of the CLICK Project
Section 2: Environmental and Social Management Plan Overview
Section 3: Detailed description of the proposed scheme covering design criteria adopted for the scheme
Section 4: Desktop review of the applicable laws
Section 5: Environmental and Social Baseline of the scheme
Section 6: Stakeholders Consultation
Section 7: Environmental and Social Impacts and Mitigation Measures,
Section 8: Environmental and Social management Plan (ESMP)
Section 9: Roles & Responsibilities
(Highlighting the institutional framework, task assigned to each group, capacity building and other needs for the effective implementation of the ESMP, and the Implementation Schedule)
Section 10: Annexures
(Covering the various aspects of the ESMP including, Waste Management Plan, Traffic Management Plan, Chance Find Procedures, COVID-19 SOPs for Construction issued by the GOP / GoS. Grievance Redress Mechanism (GRM), SEQS, AED Certificate and Environmental Monitoring and Testing Reports)

The approach and methodology for the various activities involved with the preparation and implementation of the ESMP is summarized in the following chart:



2.2. Data Collection

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

The project team completed a number of site visits to the road 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 activities.

2.3. 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 phases of the project.

2.4. 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 then 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 under:

Table 2-1: Responsibilities for Environmental and Social Management & Monitoring

AGENCY	RESPONSIBILITIES
District Council Karachi (DCK)	• 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 • Submit the monthly and quarterly monitoring and compliance reports to SEPA via IMC (Independent Monitoring Consultant); • 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 Redressal 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 DCK and orientation and awareness training for contractors; • Ensure that DCK has obtained the necessary environmental NOC(s) from SEPA prior to award of civil works contracts. In this case the necessary NOC from SEPA will be required before commencement of construction work against an environmental checklist • Assist DCK to implement a Grievance Redress Mechanism, 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 IMC before onwards submission to the WB; • Coordinate and liaison with Independent Monitoring Consultant (IMC) for the monitoring and reporting of ESMP.

AGENCY	RESPONSIBILITIES
Supervision Consultant	• Provide training and capacity building of DCK 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 DCK and PIU of any change in alignment or project design/components and provide all necessary information to the DCK 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 CESMP for Sub-project; • Assist DCK to undertake monitoring of the implementation of the ESMP (mitigation and monitoring measures) • Assist DCK 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 LC; • 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 LC 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.

2.5. Reporting System

During the whole 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, any 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 and SEPA NOC 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 LC 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 LC on a quarterly basis.
- The consultant's quarterly Progress Report to LC 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

Sub-project location is consisting of three segments of the proposed sub-project at Memon Goth. The first segment of the road is starting from Paka Sarak road in front of Farhat Bagh (Memon Goth road) to new Kashmir Bismillah hotel, District Council river road. Paka Sarak road is a type of secondary road of access to all residential communities living around the road, although, this access road is a single way minor street carriageway for both way traffic, the central island is missing in a small wider section of the road. In addition to that due to lack of repair and maintenance, as per the site visit, it is observed that the present situation of the road is in need of rehabilitation and giving the proper linking roads and utilities facilities for proper functioning, the linking road facilities are also required for rehabilitation. The second and third segment of sub-project will be required the cc paver/check tiles flooring at haji Abdul Karim Mohla and haji Shafi Mohammad Mohla respectively. Sub-project location of second segment is starting from new Memon restaurant, Memon Goth road to nearby vicinity of Jamia masjid Noor-e-Mustafa, haji Abdul Karim Mohla. Sub-project location of third segment is starting from wine shop, Memon Goth road to nearby vicinity of Subhani masjid.

Considering the requirement for road work plus the allied utilities and street furniture for rehabilitation on the existing road, the District Council is planning to restore and rehabilitate the Paka Sarak road section and cc paver/check tiles flooring at haji Abdul Karim Mohalla and haji Shafi Mohammad Mohalla respectively. The tentative cost of the sub project, is around: PKR. 83.00 million.

3.2. Sub Project Features

The Pakka Sarrak road stretches over 1.2 km in length, which is required for rehabilitation along with the required facilities like footpath, street lights, and rehabilitation of sewer manhole and fixing R.C.C precast manhole cover. Meanwhile, Second and third segment of sub-project will be required the cc paver/check tiles flooring at haji Abdul Karim Mohalla and haji Shafi Mohammad Mohalla, which are stretches over 0.55 km and 0.45km in length respectively. The subproject salient features can be seen in Table 3.1.

- Jurisdiction of Proposed Road: District Council
- Total Duration of sub-project: 03 months
- Labor requirements: 100-150 persons estimated (unskilled)
- Professional staff: 10
- Supervision consultant staff: 04

Table 3-1: Sub-project Salient Features

Sub-Project Salient Features	Details
Rehabilitation of the existing road with associated facilities like road furniture, street lights, sewerage and storm-water drainage.	• Road rehabilitation component comprises 1.2 km of road. • CC paver/check tiles flooring at Haji Abdul Karim Mohla and Haji Shafi Mohammad Mohla, which are stretches over 0.55km and 0.45km in length respectively. • No land acquisition, compensation, or resettlement will be required. • Strengthening of the existing road infrastructure; • No particular public facilities have been proposed except road furniture. • Provision of Paving Blocks 60mm thick (Including 30mm thick sand cushion)

	• Excavation. • Breaking of the existing damaged road pavement structure • Provision of paving blocks 60mm thick(Including 30mm Thick Sand Cushion) • Granular Subbase • Desilting of RCC Pipes and Manhole. • Repair and maintenance of Sewer Manhole. • Replacement of manhole cover.

3.3. Design and scope of work of road work

S.No	Typical Proposed Cross Section Details on each Sub project varies with its ROW
1	*Typical Proposed Cross* ***Sections – A (12.00 Meter)***
	Concrete Pavers – 08 cm Lean Concrete – 10 cm Granular Sub Base – 15 cm
2	*Typical Proposed Cross* ***Sections – B (08.00 Meter)***
	Concrete Pavers – 08 cm Lean Concrete – 10 cm Granular Sub Base – 15 cm
3	*Typical Proposed Cross* ***Sections – C (06.00 Meter)***
	Concrete Pavers – 08 cm Lean Concrete – 10 cm Granular Sub Base – 15 cm
4	*Typical Proposed Cross* ***Sections – D (05.00 Meter)***
	Concrete Pavers – 08 cm Lean Concrete – 10 cm Granular Sub Base – 15 cm

3.4. Street Lighting

- Installation of Street light fixture with 120W LED: 71 Nos.
- Installation of Street Light Poles: 71 Nos.

3.5. Sub-Project Location

The proposed sub-project location is shown in the **Figure 3-5**.

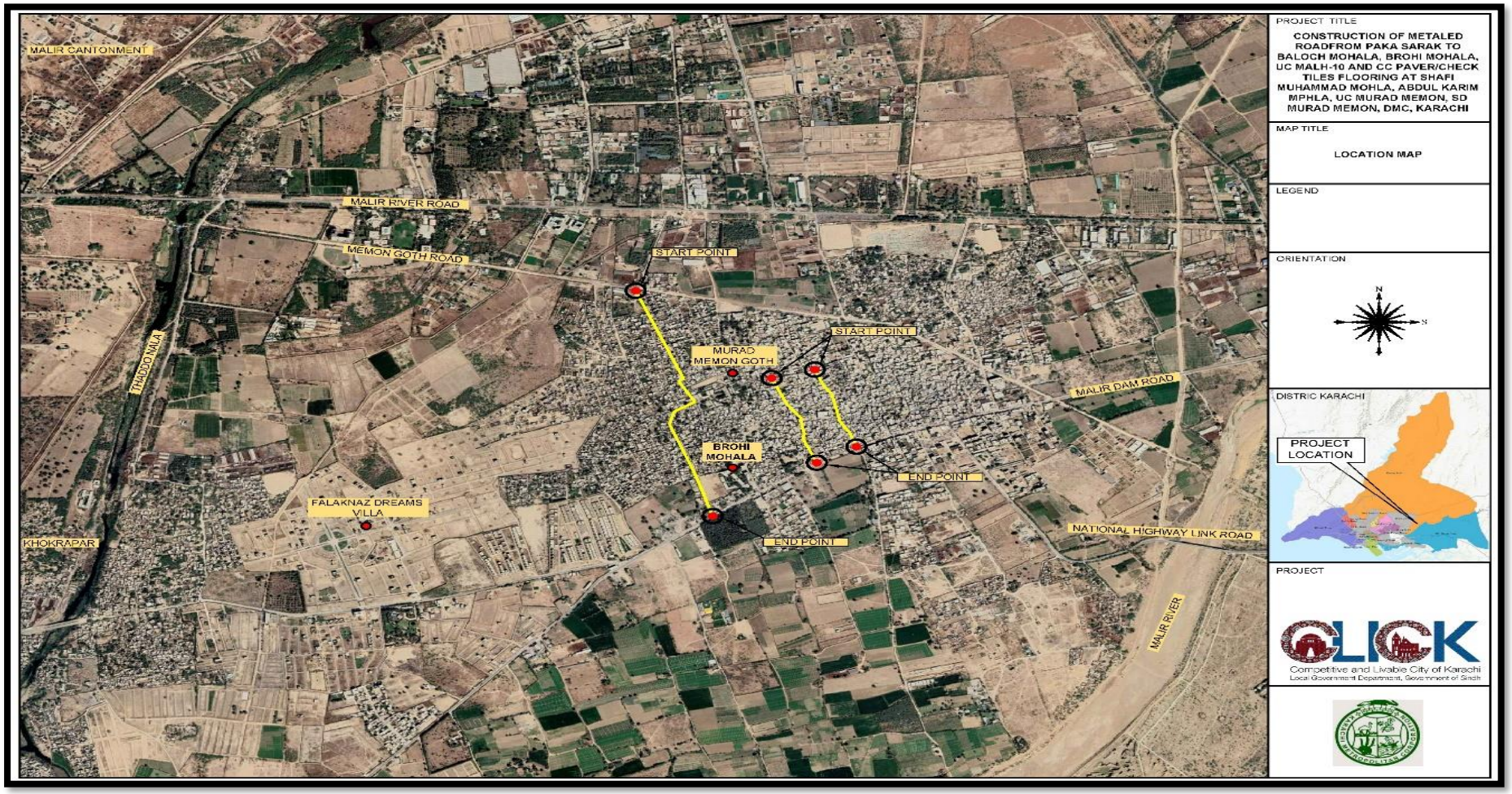
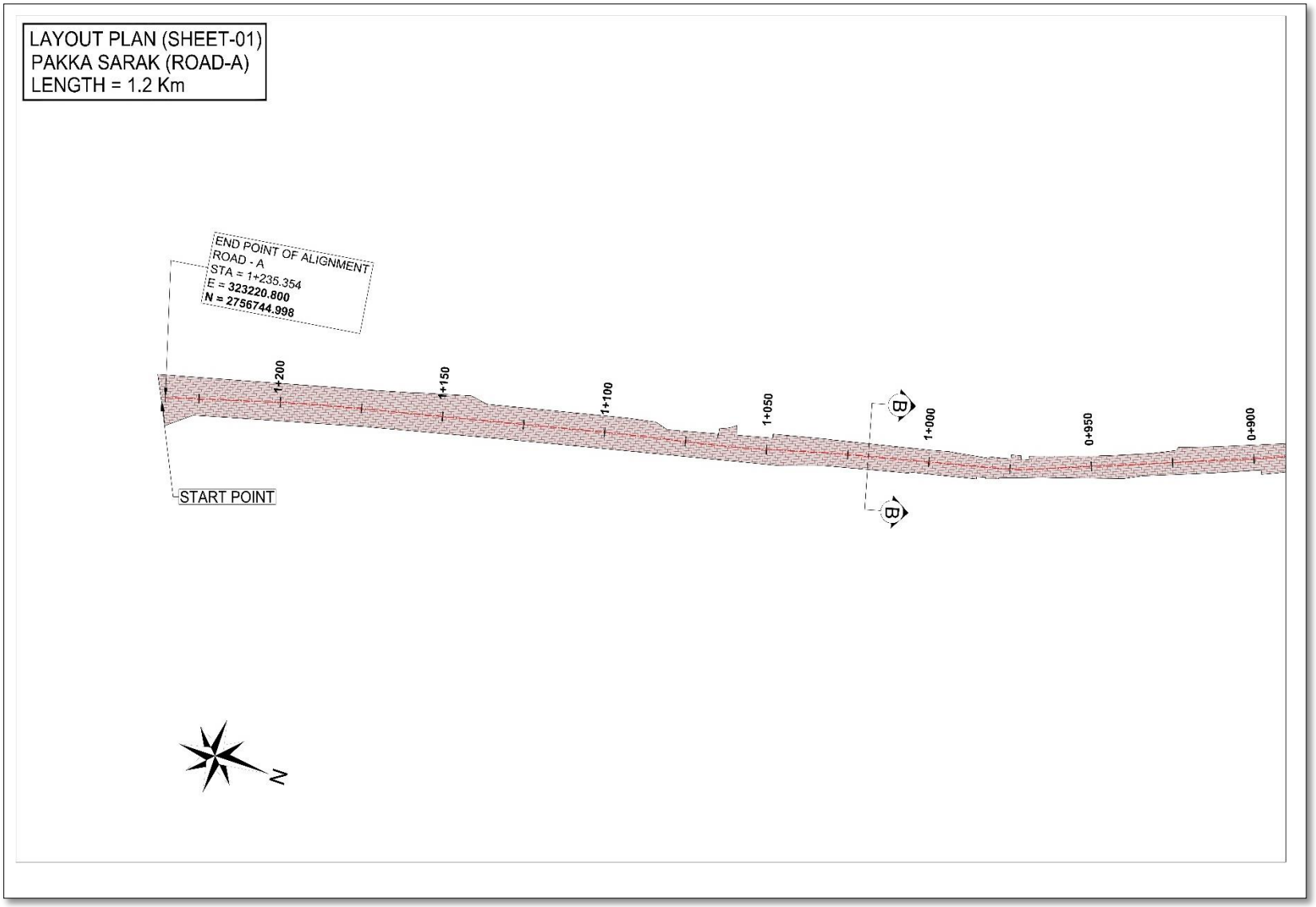
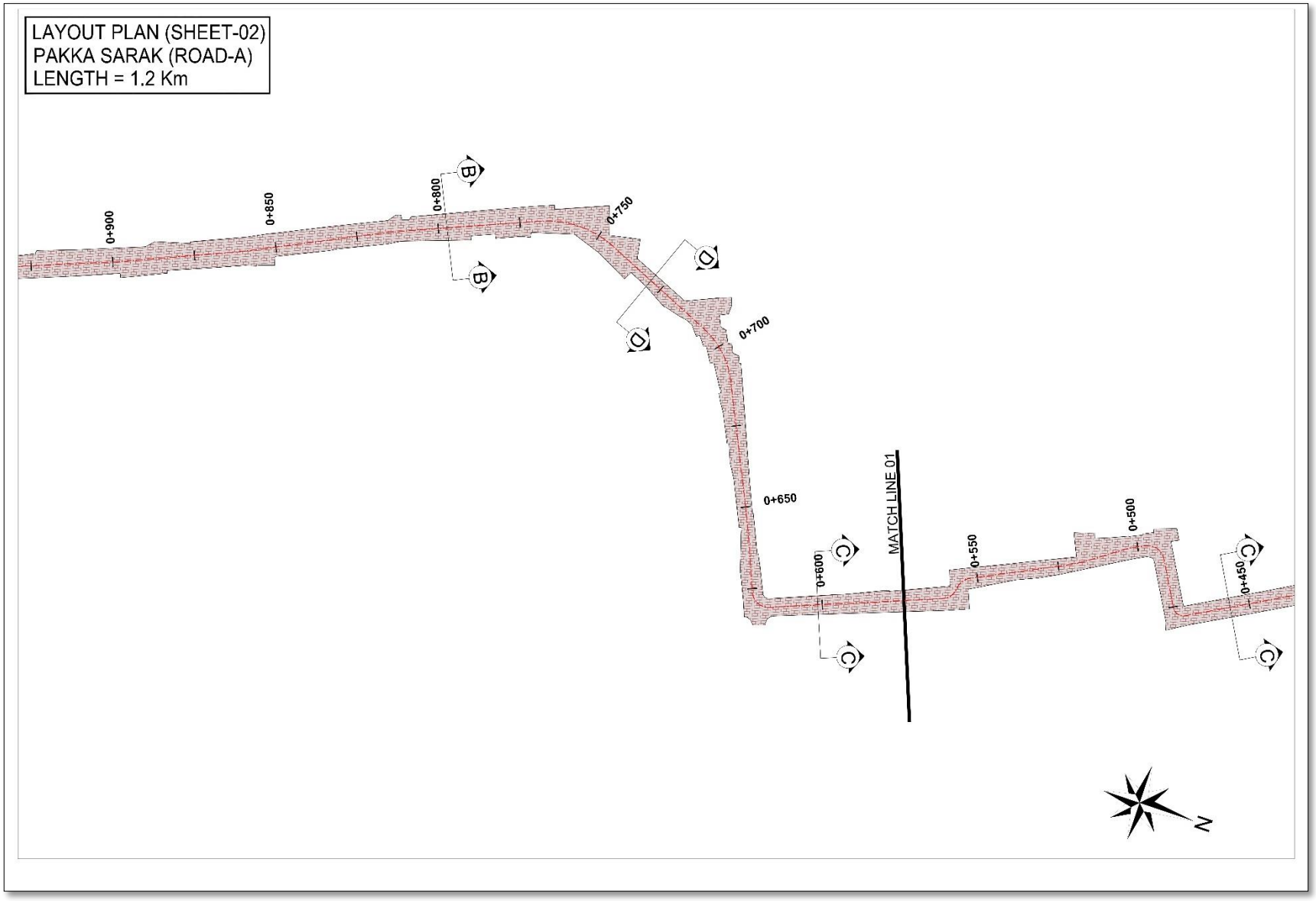
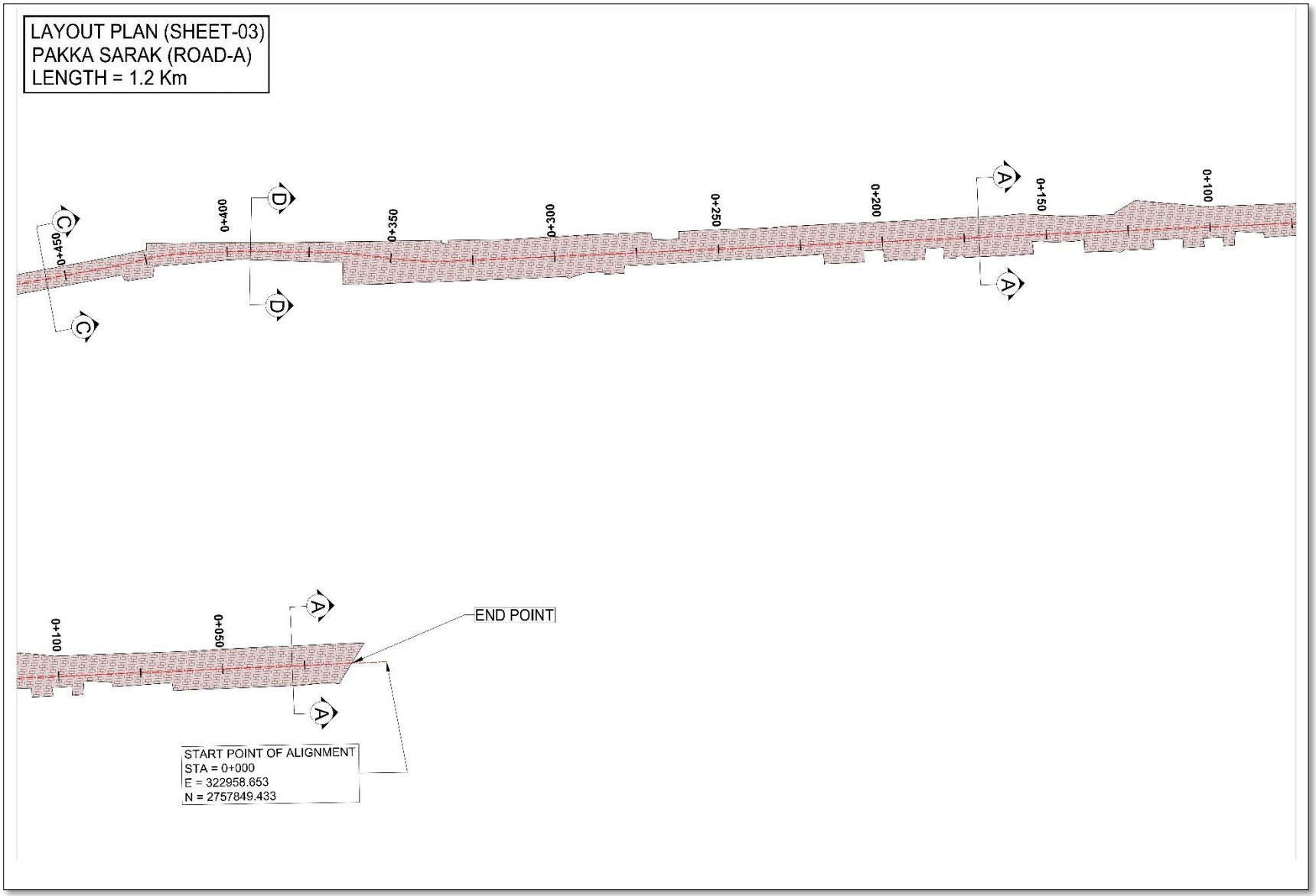
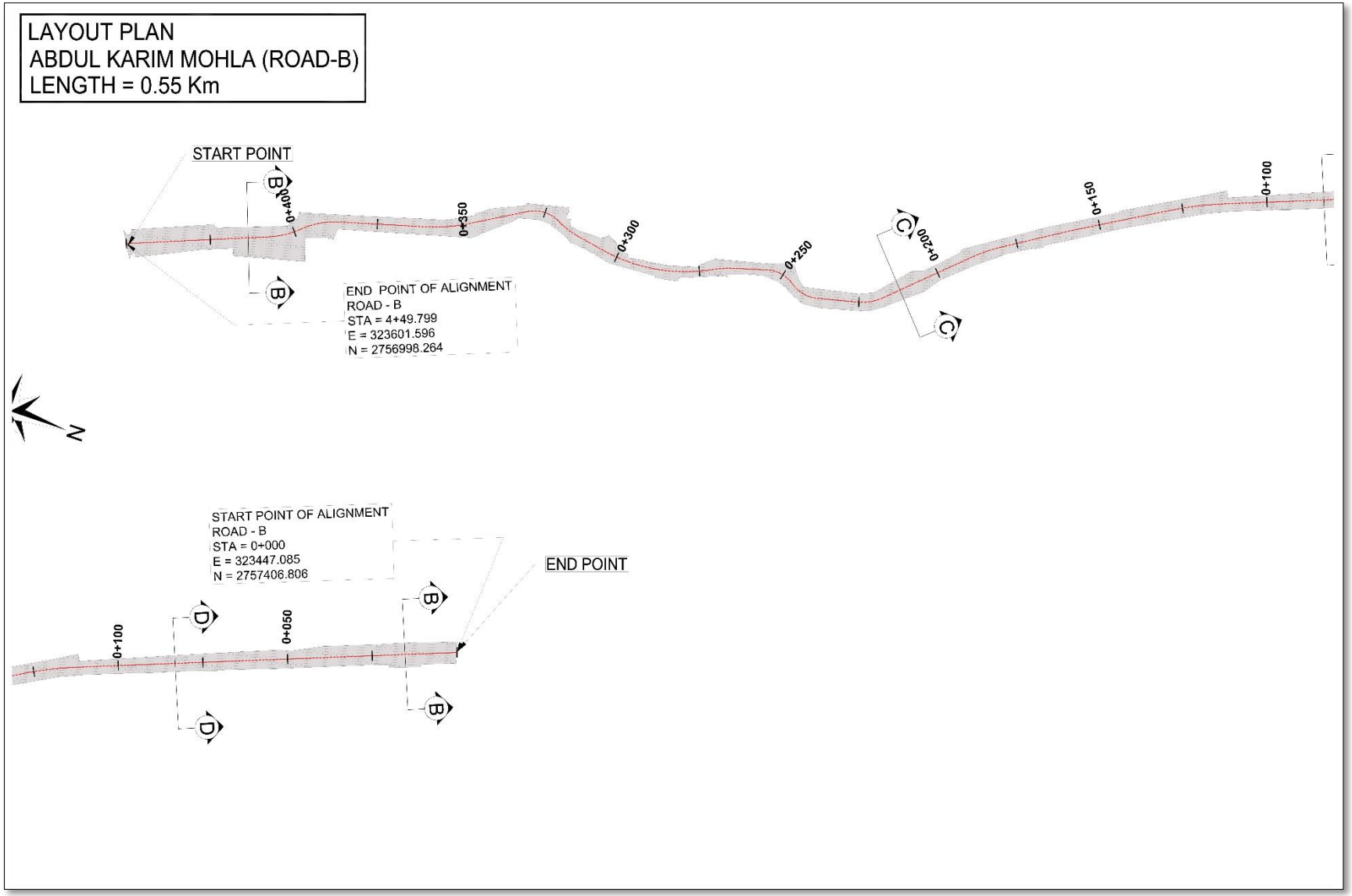


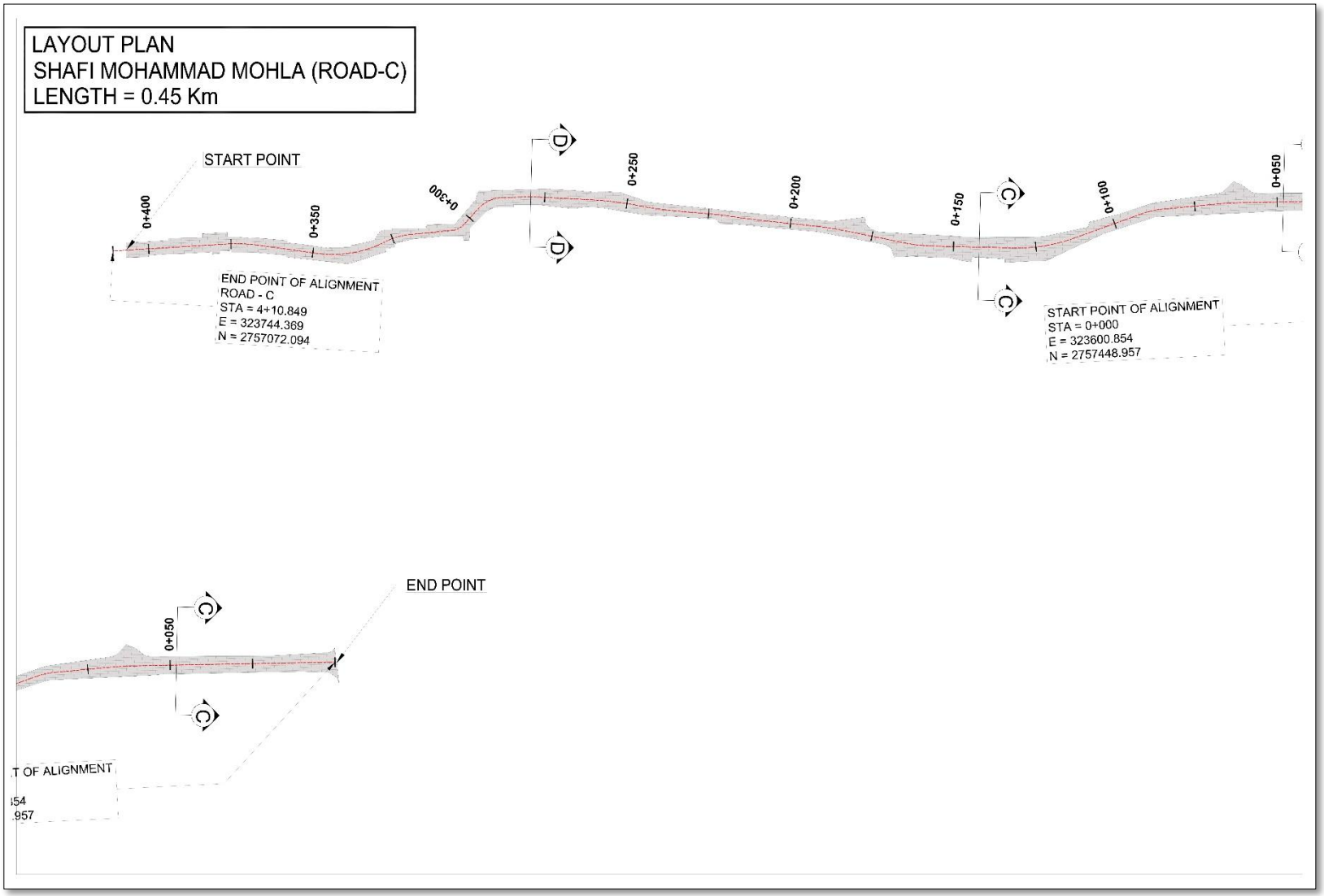
Figure 3-5: Location Map of Sub-project Site


LAYOUT PLAN (SHEET-01)
PAKKA SARAK (ROAD-A)
LENGTH = 1.2 Km
END POINT OF ALIGNMENT
ROAD - A
STA = 1+235.354
E = 323220.800
N = 2756744.998
1+200
1+150
1+100
1+050
1+000
0+950
0+900
B
B
START POINT
N


LAYOUT PLAN (SHEET-02)
PAKKA SARAK (ROAD-A)
LENGTH = 1.2 Km
0+900
0+850
0+800
0+750
0+700
0+650
0+600
0+550
0+500
0+450
MATCH LINE 01
B
B
D
D
C
C
C
C
N


LAYOUT PLAN (SHEET-03)
PAKKA SARAK (ROAD-A)
LENGTH = 1.2 Km
C
0+450
C
D
0+400
D
0+350
0+300
0+250
0+200
A
0+150
A
0+100
A
0+100
0+050
A
END POINT
START POINT OF ALIGNMENT
STA = 0+000
E = 322958.653
N = 2757849.433


LAYOUT PLAN
ABDUL KARIM MOHLA (ROAD-B)
LENGTH = 0.55 Km
START POINT
0+400
0+350
0+300
0+250
0+200
0+150
0+100
END POINT OF ALIGNMENT
ROAD - B
STA = 4+49.799
E = 323601.596
N = 2756998.264
N
START POINT OF ALIGNMENT
ROAD - B
STA = 0+000
E = 323447.085
N = 2757406.806
END POINT
0+100
0+050


LAYOUT PLAN
SHAFI MOHAMMAD MOHLA (ROAD-C)
LENGTH = 0.45 Km
START POINT
0+400
0+350
0+300
0+250
0+200
0+150
0+100
0+050
END POINT OF ALIGNMENT
ROAD - C
STA = 4+10.849
E = 323744.369
N = 2757072.094
START POINT OF ALIGNMENT
STA = 0+000
E = 323600.854
N = 2757448.957
END POINT
0+050
T OF ALIGNMENT
54
957

3.6. Sub-Project Significance

The proposed roads are concerned with as it connects local area population with one of the closest District Council River Road, where a number of traffic movement take place for the public transportation. Every day a large number of people from this area visit towards the different destinations. The betterment of the proposed road will make ease for the local community who is suffering from the bad situation of the road. Therefore, the proposed road would not only resolve the traffic issues in the locality but also promote healthy environmental approach for the people and local residents.

District Council will serve the residents and other user and commuters of the present road to achieving the following objectives:

- To provide best traveling facilities to the residents.
- To provide the shortest time to reach the destination.
- To ease the traffic on the present road.
- To improve the law- and- order situation.
- Better commuting for the residents living in the local areas to adjoining areas to this road.

3.7. Subproject Environmental Setting

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

3.8. 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, etc.)

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

3. Construction of Facilities
   a) Contractor's Office, Workshop and Work Areas (areas required and proposed layout, type of construction of buildings, etc.).
   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, etc.).

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.

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 District Council.*			

3.9. 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

3.10. Sub-Project Activities

3.11. Design Phase

To design the sub-project, consultancy services have been taken onboard 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.

GENERAL DESIGN CONSIDERATION:
This road is considered as local urban street, which is a public roadway for vehicular travel including public transit and includes the entire area within the right of way. The local street also serves pedestrian and bicycle movement and accommodates public utility facilities within the right of way.

DESIGN STANDARDS:
The design features of local urban streets are governed by practical limitations to a greater extent than those of similar roads in rural areas. The major design control for these roads is the type and extent of urban development with its limitation on rights-of-way.

Design speed is not a major factor for local streets. For consistency in design elements, design speed ranging from 30 to 50 km/hr. may be used, depending on available right-of-way, terrain, likely pedestrian presence, adjacent development and other area controls. Keeping these factors in view, this sub project is designed for the speed of 40km/hr.

Accordingly on the basis of an adopted 40 KPH design speed, subsequent geometric standards for the design are followed as shown in Table 3-4. These are based on the AASHTO publication titled "A Policy on Geometric Design of Highways".

Table 3-4: Road Design Criteria

S.No	DESIGN PARAMETERS	VALUES	UNIT	AAHSHTO POLICY 2011 PAGE NO.
1	Design Speed	40	Km/hr.	
2	Design Vehicle	Single Unit Truck		2-1
Cross Sectional Elements				
3	No. of Lanes	2		
4	Lane Width	3.65	M	4-7
5	Footpath Width	1.5 (min)	M	
6	Pavement Cross Slope	1.5%	%	4-1
Horizontal Alignment				
7	Min. Stopping Sight Distance	50	M	3-4
8	Max. Rate of Super elevation	4.0	%	3-30
9	Min. Radius of Curve	47	M	3-32
Vertical Alignment				
10	Max. Allowable Grade	4.0	%	
11	K value (crest)	4	m/A%	3-155
12	K value (sag)	9	m/A%	3-161

PROPOSED GEOMETIRC DESIGN:

The geometric design is primarily concerned with the elements that make up the visible features of the roadway. The factors, which have to be considered in geometric design, are primarily the horizontal and vertical curvature, the roadway cross-section elements, road gradients and the layout of intersections and junctions. Proper geometric design inevitably reduces the number and severity of road accidents. Apart from these considerations, care will also be taken that the road presents an aesthetically pleasant picture to drivers and onlookers.

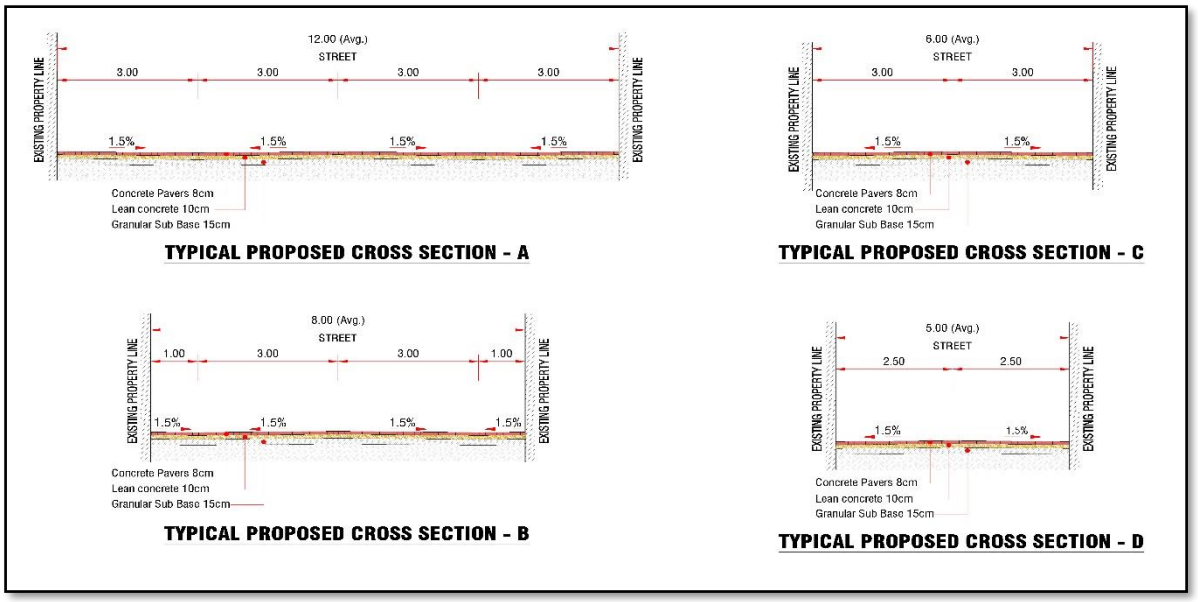
The proposed road is designed in such a manner that it should contain proper two way traffic lanes, parking where width is available and footpaths up to boundary wall of park and up to property line on other side for safe pedestrian movement.

The Project road geometry has been designed in such a way to provide optimum efficiency in traffic operations with maximum safety at a reasonable cost. Horizontal and vertical alignments are verified to evaluate their conformity with the design standards, including curve radii, and vertical grades which are sufficient for surface run off. According to AAHSTO design policy, for proper drainage, the desirable minimum grade of 0.2 percent may be used.

ROAD PAVEMENT STRUCTURE:

Keeping in view, the prevailing condition of road, it has been observed that the road pavement of this peripheral road required rehabilitation to restore the pavement surface to the required level of service. Moreover, it is also necessary to achieve adequate cross slopes on edges of the road. The existing asphaltic layer is to be cold milled. Cold milling is the process of removing the top layer of asphalt to a specified and even depth without disturbing the underlying aggregate base course. After this process, an additional aggregate base course layer will be laid on already existing aggregate layer.

Following pavement structure is adopted for this road at 04 different cross section;



Concrete Pavers: 8 cm
Lean Concrete: 10 cm
Granular Sub Base: 15 cm

Above mention cross sectional sub base layers are followed for each typical cross section.

ROAD FURNITURE:
Road furniture includes lane marking, fencing, pedestrian crossings, pavement studs, road safety devices, direction arrows etc. which are an essential provision and act as a means of communication between the road and driver. These types of local urban street usually do not include all kinds of road furniture, however pavement markings and some of the traffic signs will be provided.

The yellow lane marking at the distance of 0.3m from the road edge and white lane marking on the centre of the road will be painted. Reflectorized studs are also provided on the pavement marking. Some of the regulatory signs are also proposed at appropriate locations where necessary.

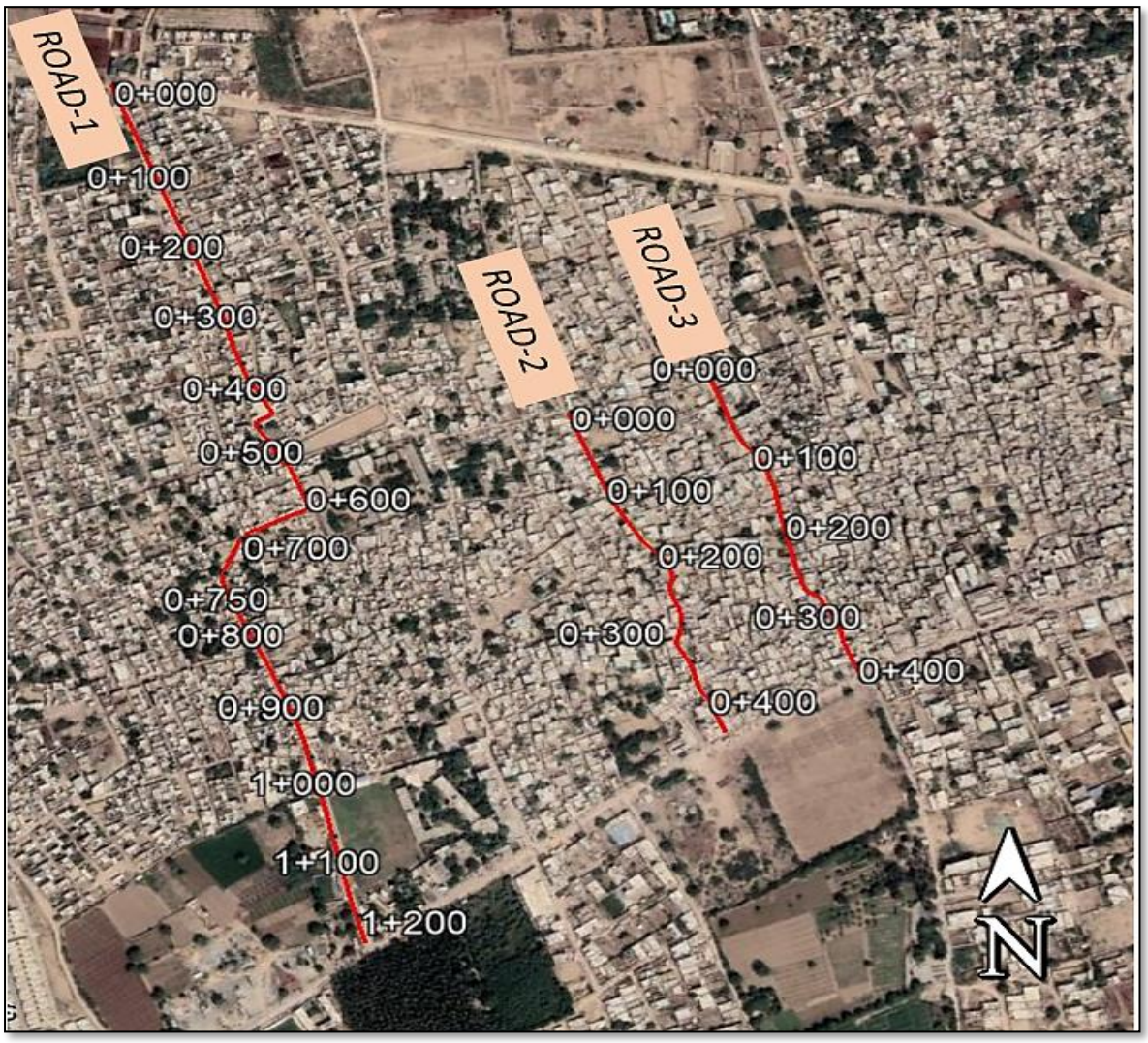
EXISTING CONDITION OF STREETS LIGHTS:
Currently, the Poles and Electrical connection is not in a working condition at the sub-project site and most of the peripheral road remains in the dark at night.

PROPOSED STREET AND ROADWAY LIGHTING:
Good visibility under day or night conditions is one of the fundamental needs for driver to travel on roadways in safe and coordinated manner. Therefore adequate illumination is provided through street light poles on footpath along the peripheral road.

- Installation of Street light fixture with 120W LED: 71 Nos.

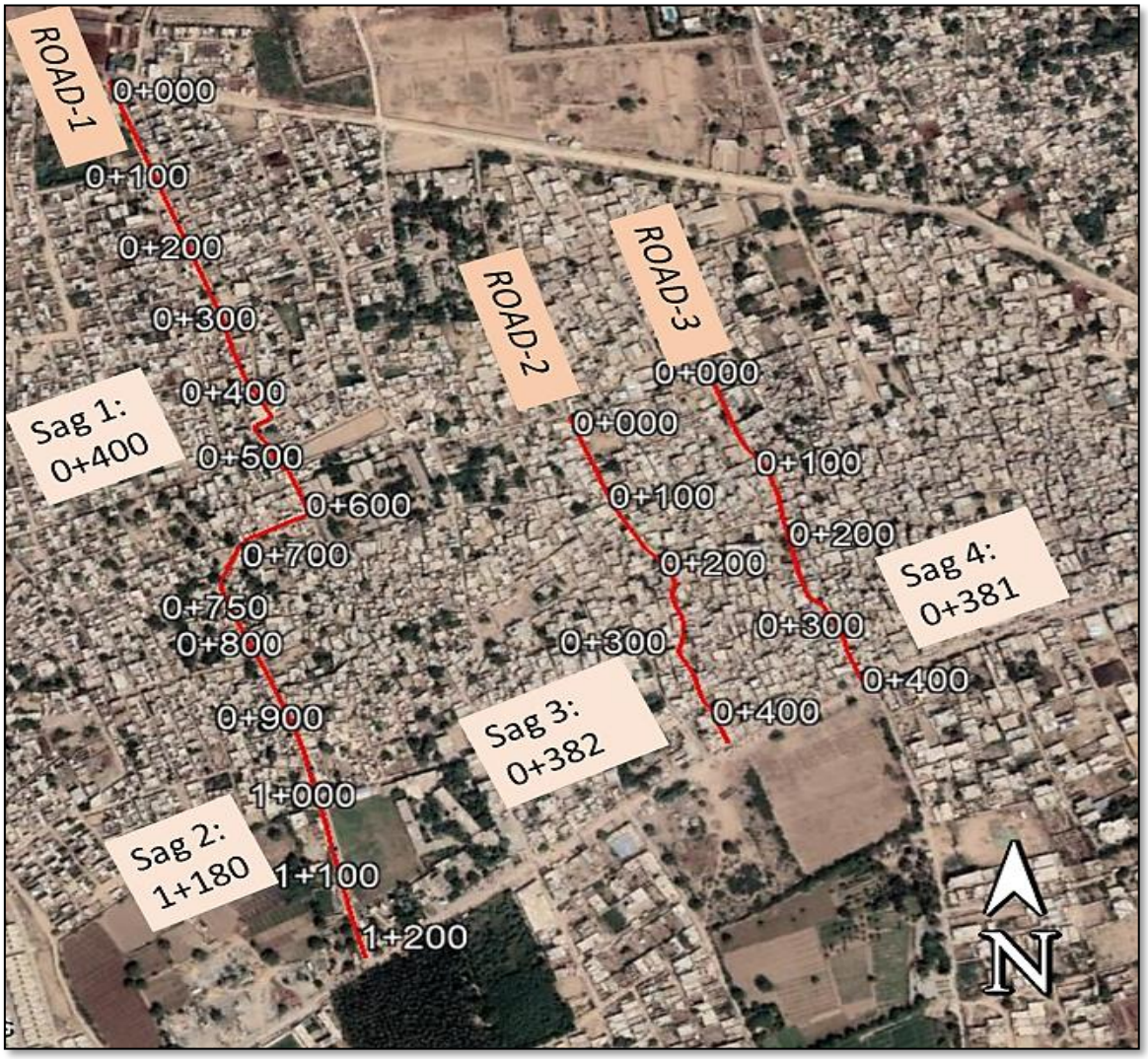
EXISTING DRAINAGE SYSTEM:

Presently, there is no surface drainage system is available in the scheme. The storm water travel towards the low lying streets from the roads and cause ponding. Moreover some quantum of storm water is also accumulated on road due to uneven surface and potholes. However, there is a provision of collecting storm water through combined storm sewer line of 15 inch diameter which is running under the road. Furthermore, manhole cover of existing sewer lines are majorly damaged and needs to be replaced.



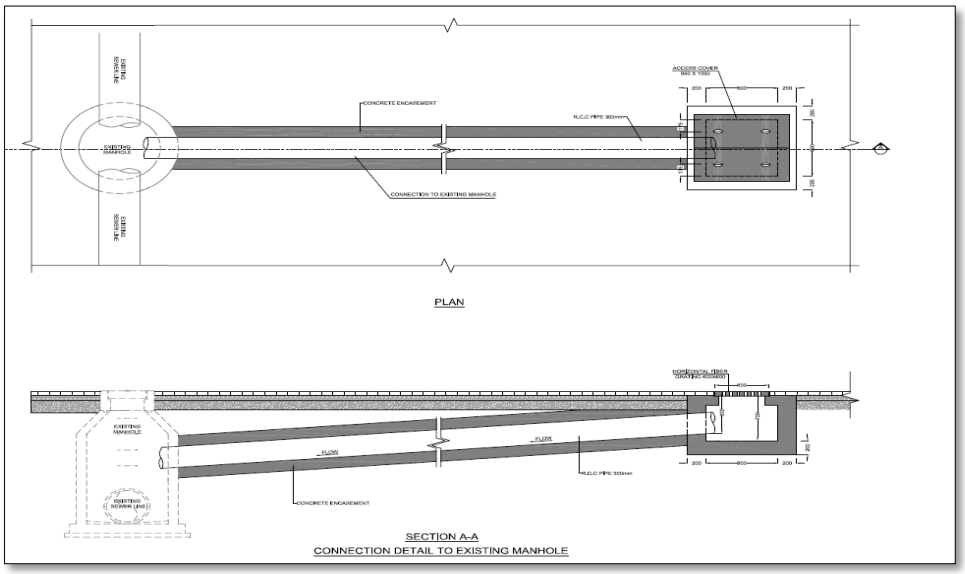
PROPOSED DRAINAGE SCHEME:

In order to avoid accumulation of storm water, road profile is designed in such a way to allow surface runoff through road grade and improve all potholes. In addition to this chambers are provided for storm water at every low point of road and it connects to the combine storm sewer system. Total eight chamber are proposed after study road profiles to avoid accumulation of storm water at road 1, 2 and 3.



The proposed work comprise as follows;

- Construction of inlet chamber at sag points
- Replacement of manhole cover.



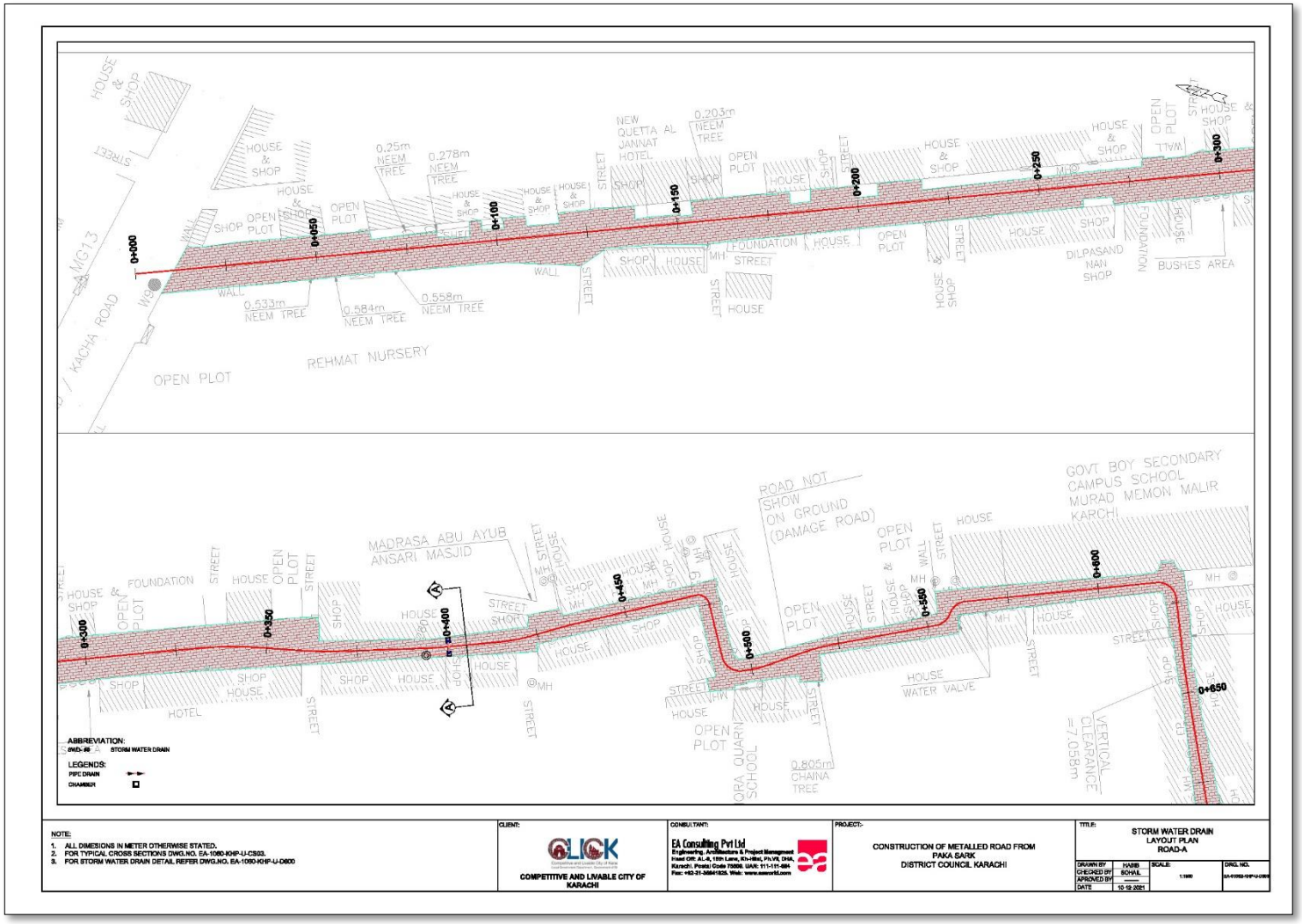


Figure 3-1: Layout Plan for the Proposed Rehabilitation of Paka Sarak Layout - 01

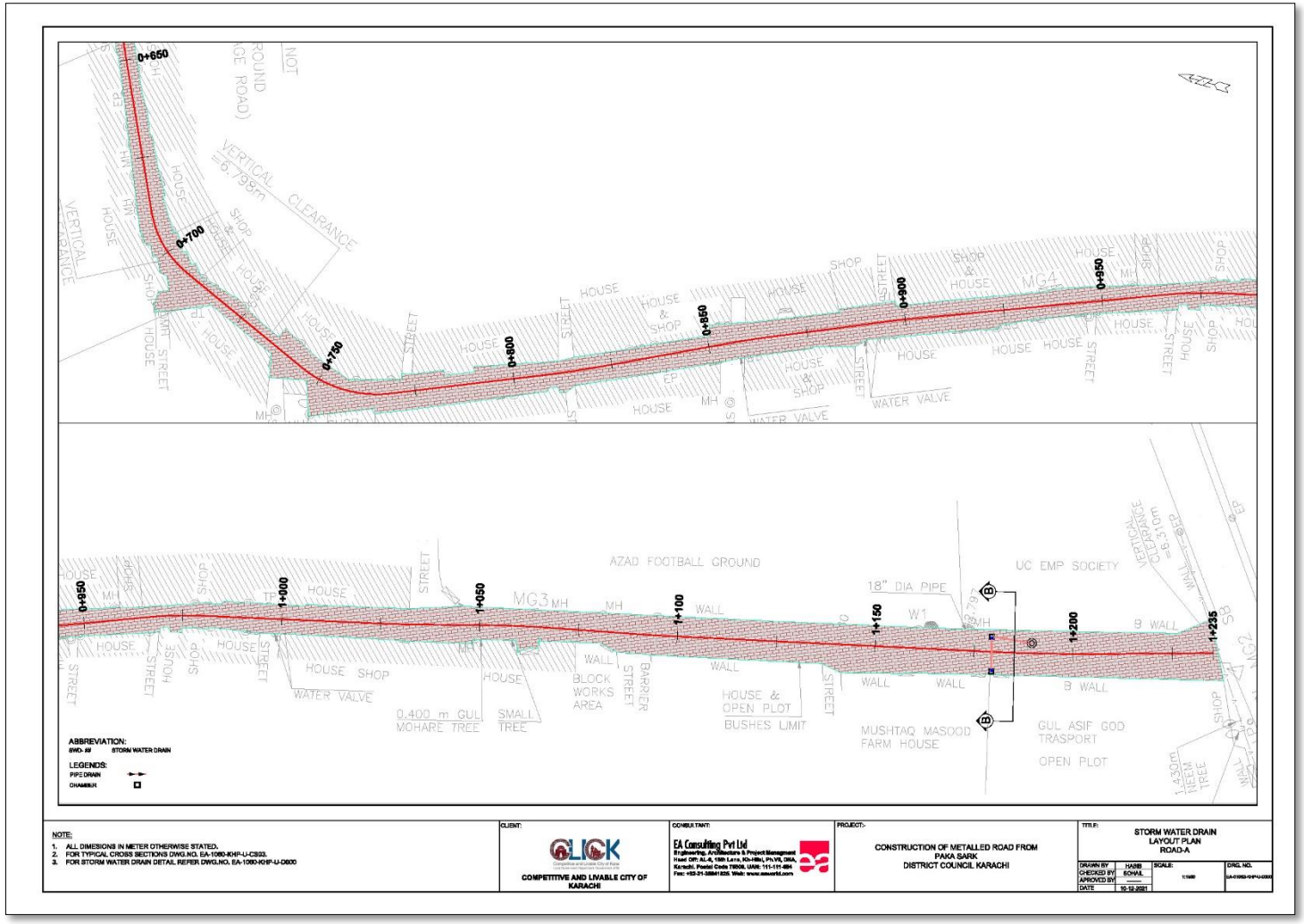


Figure 3-2 : Layout Plan for the Proposed Rehabilitation of Paka Sarak Layout - 02

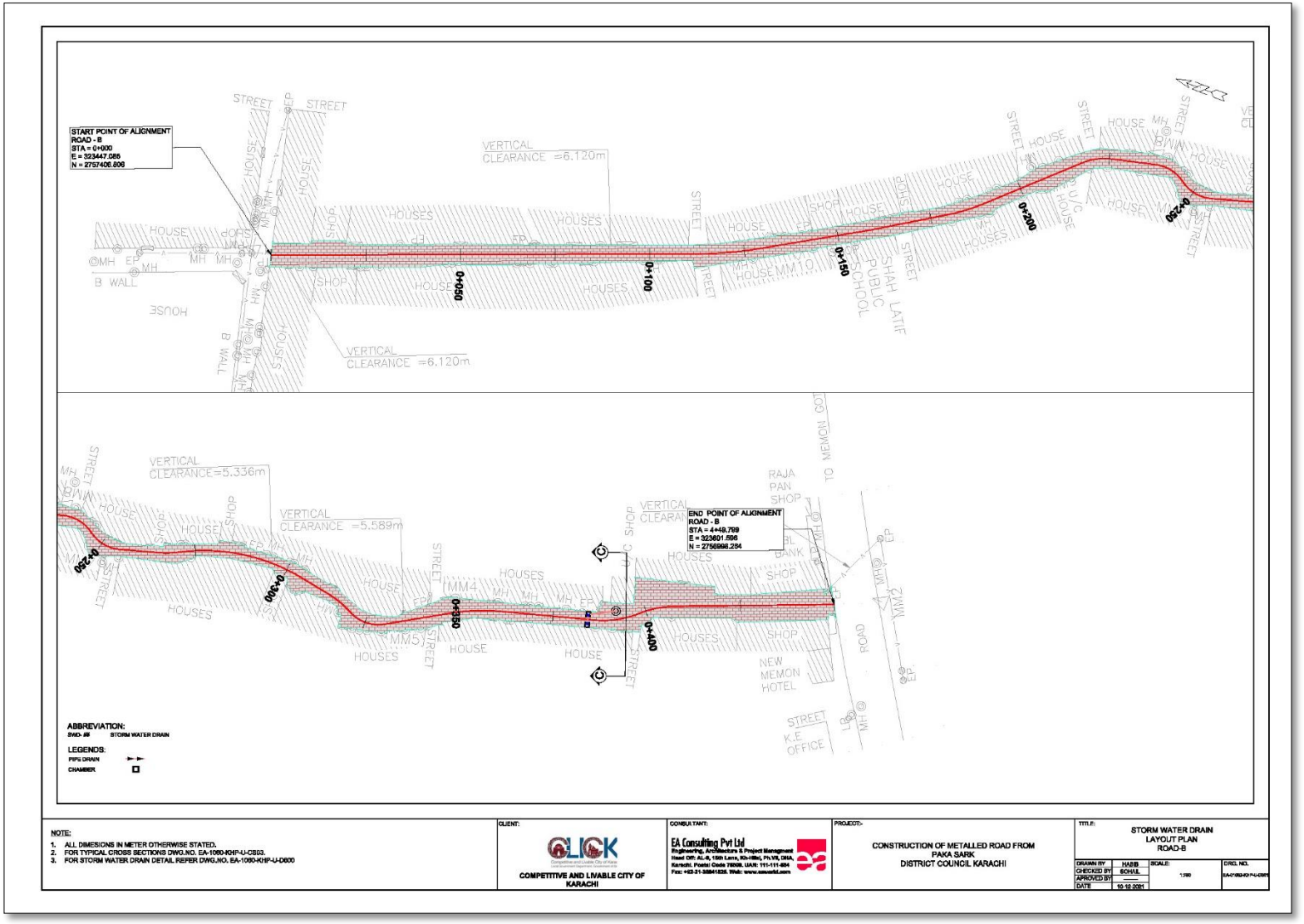


Figure 3-3 : Layout Plan for the Proposed Rehabilitation of Paka Sarak Layout - 03

k

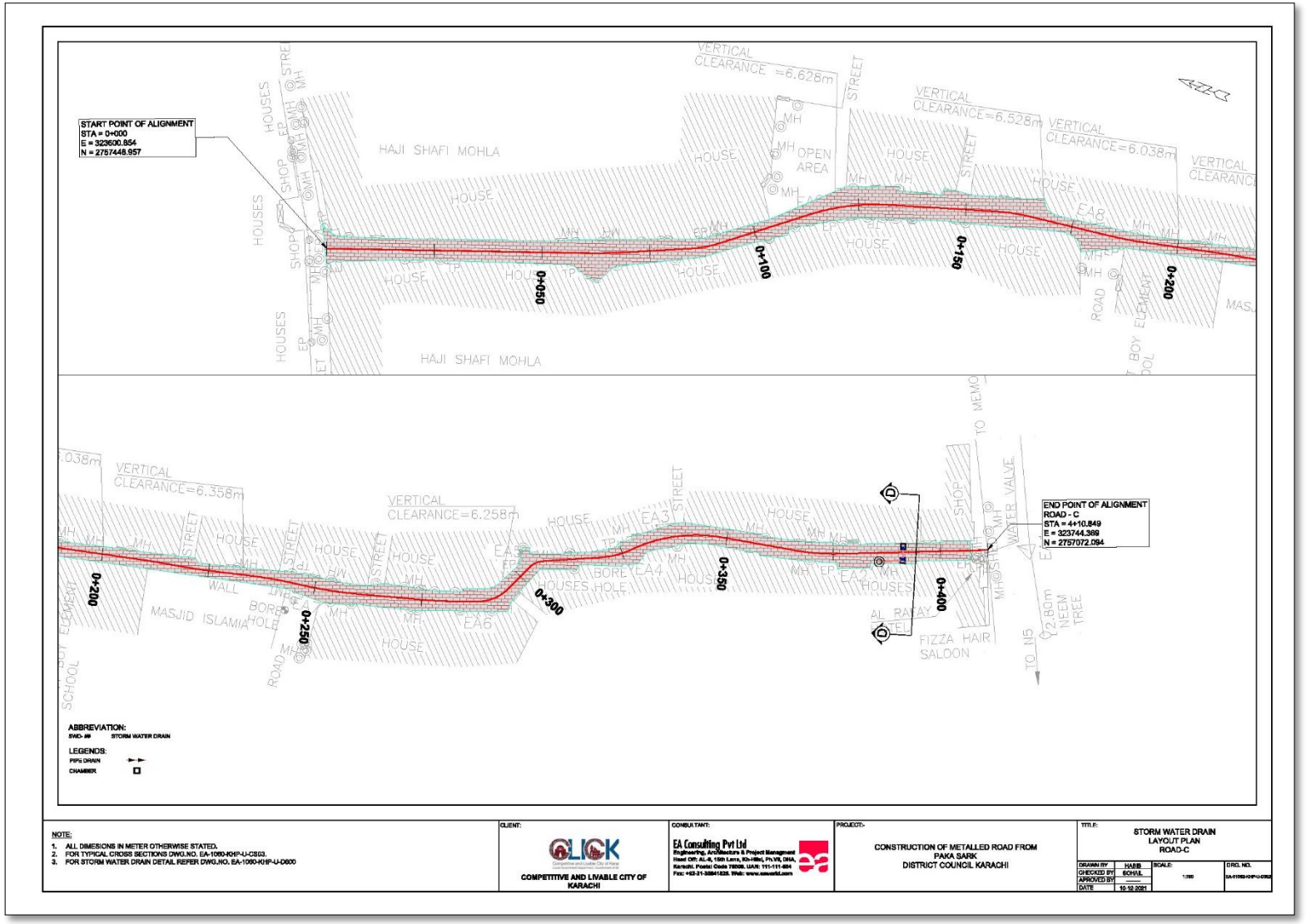


Figure 3-4 : Layout Plan for the Proposed Rehabilitation of Abdul Karim Mohala

3.12. Construction Phase

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

-Excavation
-Breaking of the existing pavement structure
-Road pavement –structure
-Aggregate base
-Pavement marking
-Traffic sign
-Footpaths
-Drainage work
-Replacement of manhole cover
-Installation of street lights,
-Electrification

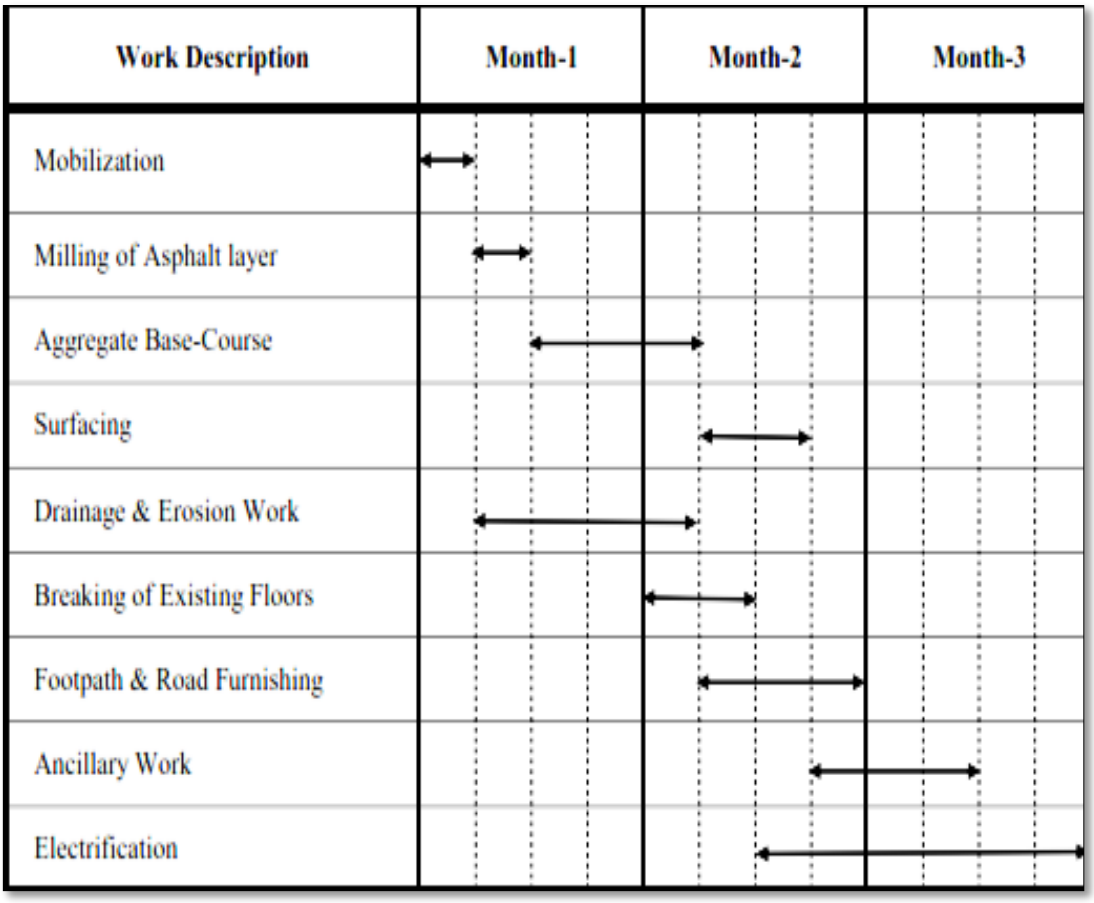


Figure 3-5: Gantt chart for Proposed Sub-project

3.13. Operation and Maintenance Phase

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

Recommendation for operation and maintenance: District Council Karachi 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**
-Regularly daily removal of dirt and substances. -Periodically check the condition of Road, Lights, Signage's, storm water drain and electric Poles. -Regularly repair the damage items immediately. -Frequently ensure the proper Solid & Liquid Waste management at site. -Frequently ensure proper road furniture including signage along the road side.	Dedicated staff member of District council Karachi Staff	Visual inspection	As per the district Council Karachi existing SOPs/ Monitoring regime	Focal Person of District Council Karachi and dedicated staff

Chapter 4. APPLICABLE LAWS

4.1. National and Provincial Requirements

The sub-project will be implemented 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).
-Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021. According to the Schedule-I of Environmental Assessment Regulation 2021, following project, which will require Environmental Screening (through Environmental Check list) are listed below:

"Construction/Reconstruction/Rehabilitation of roads in urban area from 500 meters to 01 kilometers and rural area from 500 meters to 05 kilometers". Therefore, SEPA's NOC will be required for the sub-project before initiation of construction work.

-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

4.4. 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

S.No	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 road.
2.	Physical Cultural Resources	OP/BP 4.11	√	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 at the existing road 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 subproject 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 were identified, the detailed survey is under process and a comprehensive ARAP will not only be shared with Bank but also be implemented in a satisfactory manner 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 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 roads 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 road 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 based on the surveys conducted by the team, supplemented with the secondary data from published literature and previously conducted studies within the sub-project area.

5.2. Climate:

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.

5.3. 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 05 years in Karachi to describe the weather conditions are shown in **Figure 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.

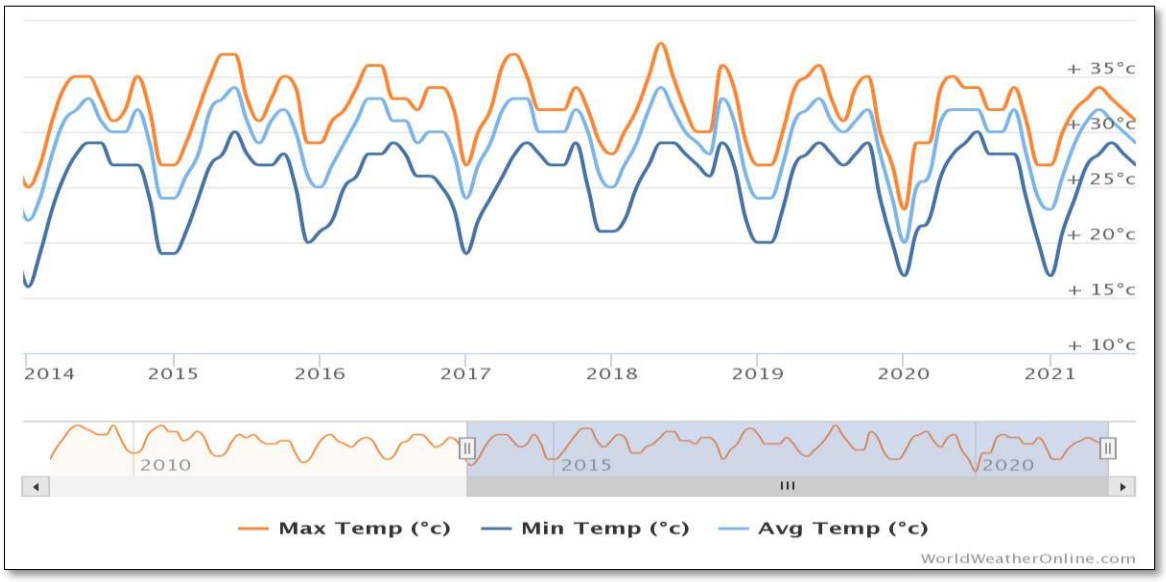


Figure 5-1: Maximum, Minimum and Average Temperature (Karachi)

Source: World Weather Online (https://www.worldweatheronline.com/karachi-weather-averages/sindh/pk.aspx)

5.4. 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.[4] In last year (2020), due to heavy rain fall 41 people were killed in Karachi.[5] Therefore, during the monsoon season, adequate protective measures and necessary arrangements are required at construction project sites in Karachi.

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

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

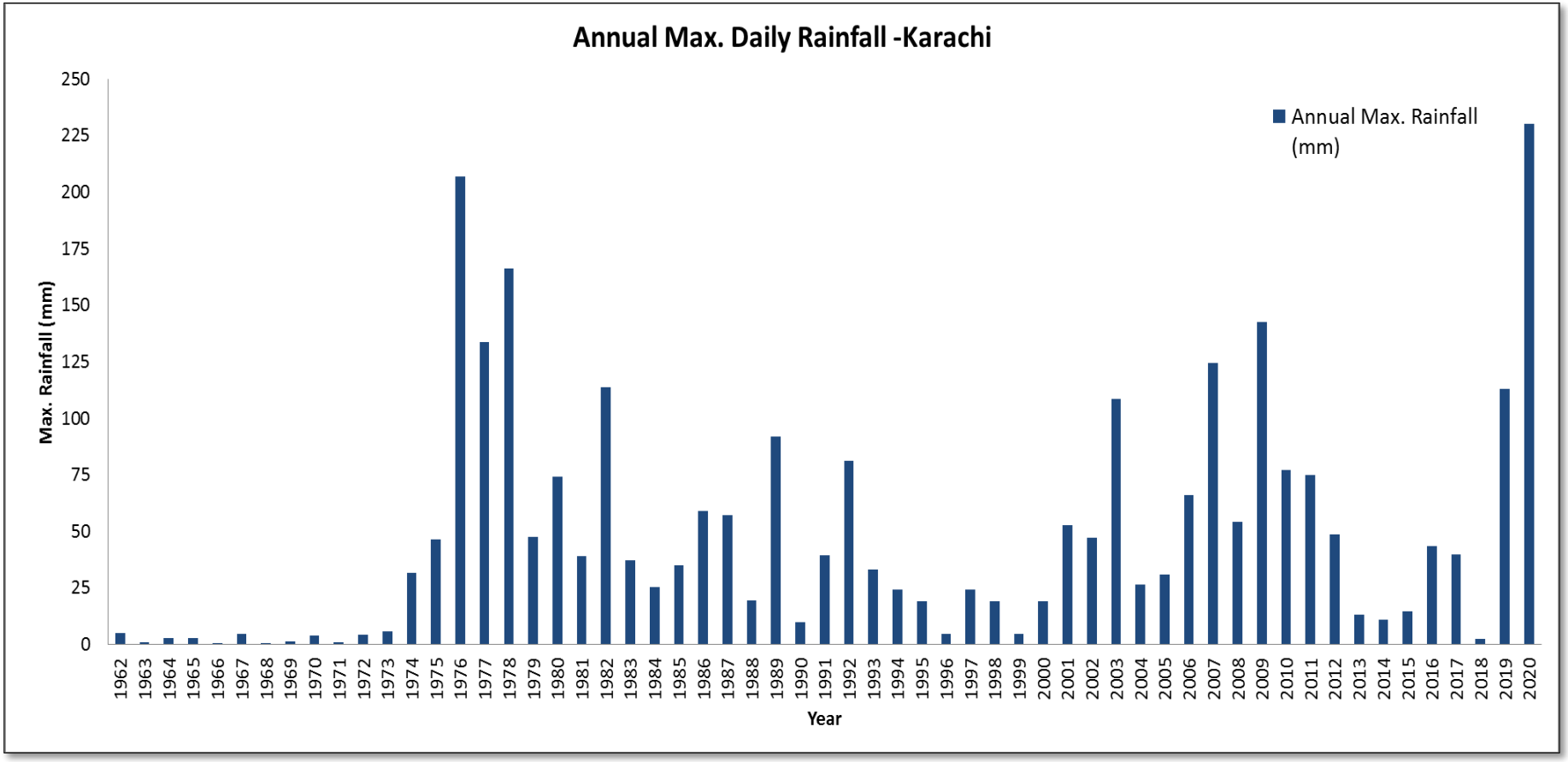


Figure 5-2: Annual Max. Daily Rainfall Karachi from 1962 to 2020

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

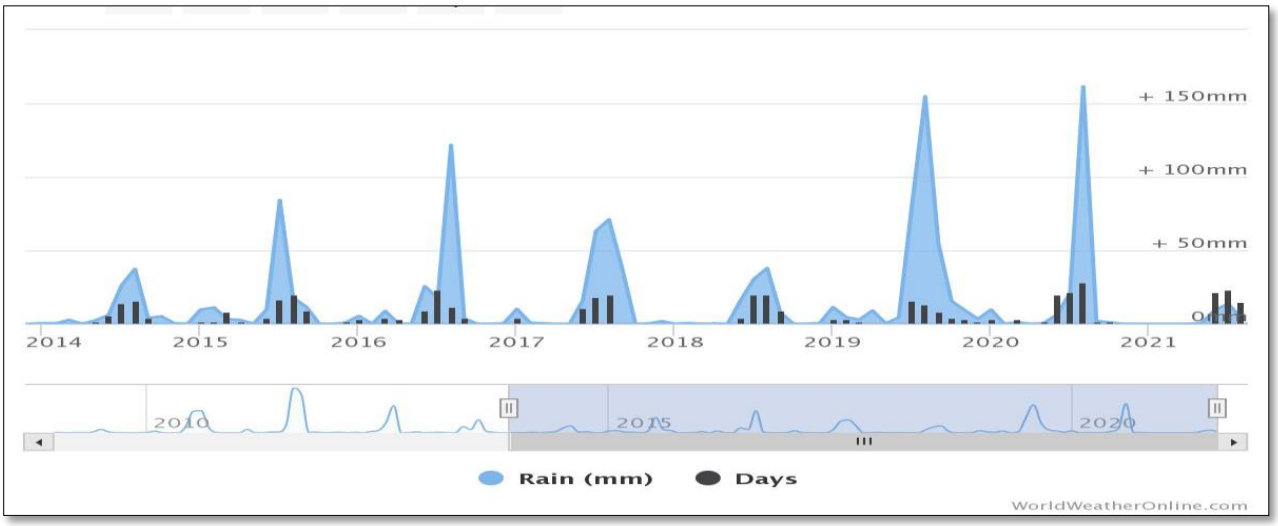


Figure 5-3: Monthly Average Rainfall (mm) of Karachi
Source: World Weather Online
(https://www.worldweatheronline.com/karachi-weather-averages/sindh/pk.aspx)

5.5. 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.

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

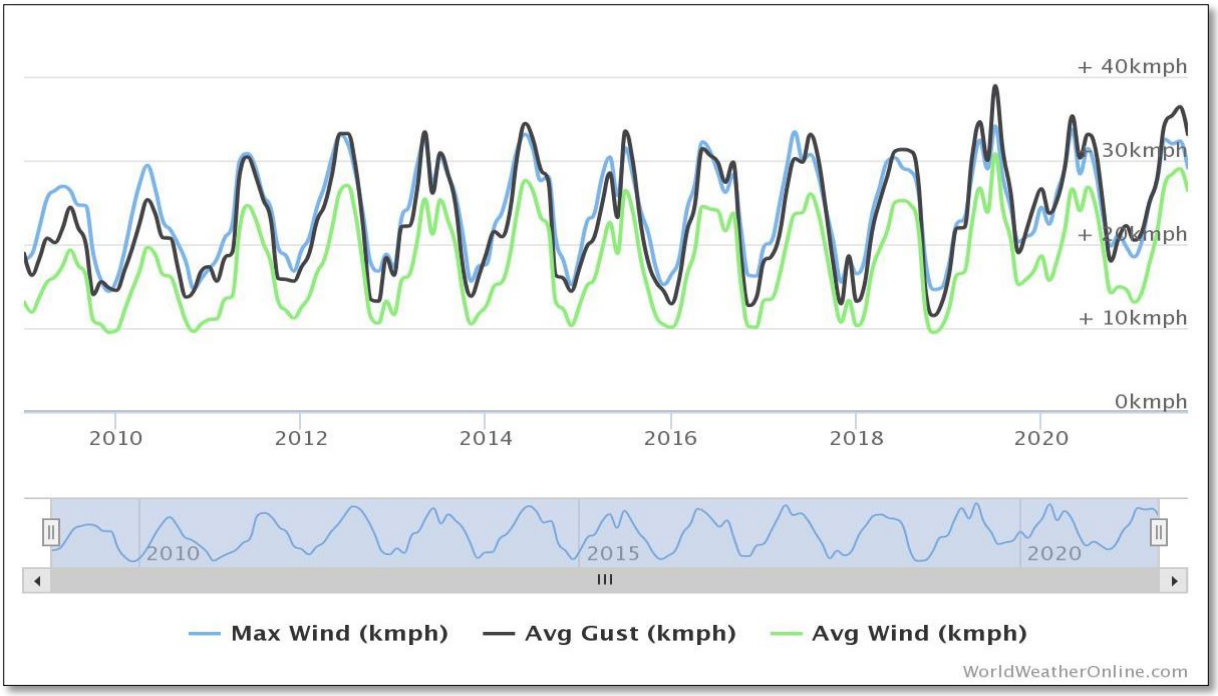


Figure 5-4: Monthly Average and Maximum Wind Speed of Karachi

Source: World Weather Online (https://www.worldweatheronline.com/karachi-weather-averages/sindh/pk.aspx)

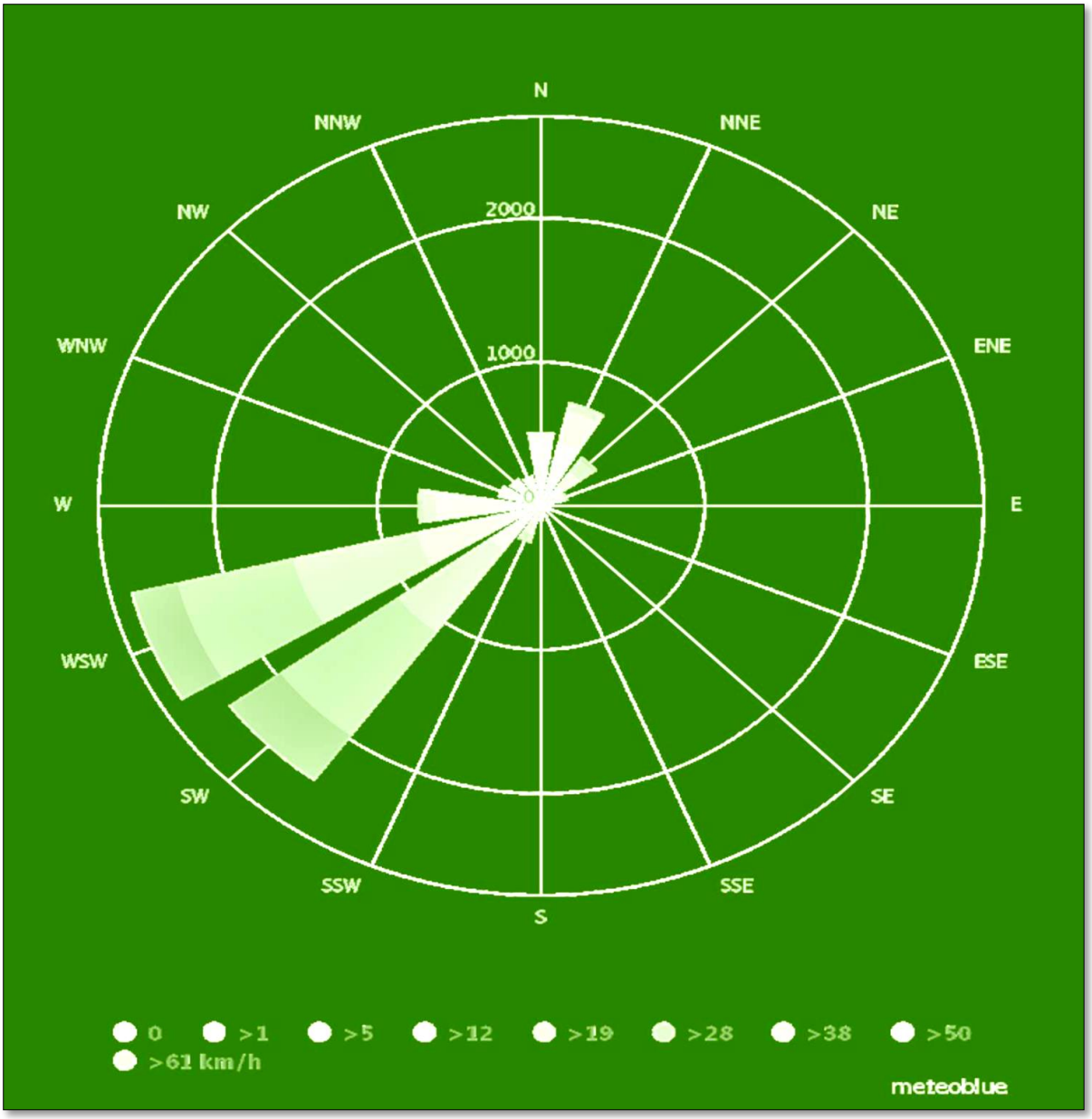


Figure 5-5: Wind Rose of Karachi

Source: Pakistan Meteorological Department

5.6. 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 three 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 three different spots at the sub-project site. The values of PM2.5 and PM10 are higher due to humidity, wind direction, wind velocity. The most

significant sources of particulate are industrial processes, combustion of wood and fossil fuels, construction and demolition activities and entrainment of road dust into air. Results of 24 hours ambient air quality monitoring results at sub-project site are given in Table 5-1.

Table 5-1: Ambient Air Quality Monitoring Results

S.No	Parameter	Unit	SEQS	Average Concentration		
				Location-1	Location-2	Location-3
				Construction of Metaled Road From Pakka Sarak to Baloch Mohla, Barohi Mohla, UC Malh-10(Near Kashmir Bismillah Hotel)	Abdul Karim Mohla	Shafi Mohammad Mohla
				24°55'32.1"N 67°14'50.3"E	24°55'18.0"N 67°15'06.2"E	24°55'19.1" N67°15'11.6"E
1	CO	mg/m^3	5	1.93	2.48	2.55
2	O^3	µg/m^3	130	7.13	6.81	6.86
3	NO	µg/m3	40	15.51	16.99	17.38
4	NO_2	µg/m^3	80	26.7	26.77	26.4
5	SO_2	µg/m^3	120	17.33	22.88	23.01
6	PM_{10}	µg/m^3	150	161.92	166.92	168.71
7	$PM_{2.5}$	µg/m^3	75	80.29	82.67	82.96
8	SPM	µg/m^3	500	243.71	247.83	248.96
9	Pb	µg/m^3	1.5	0.128	1.02	1.059

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

5.7. 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 three different spots at the sub-project site. Monitoring results are not complying with SEQS limits at the sub-project site. Results of real time noise quality are presented in Table 5-2.

Table 5-2: Noise Level Monitoring Results

S.No	Parameter	Sampling Directions	SEQS (dB)	Location-1	Location-2	Location-3
				Construction of Metaled Road From Pakka Sarak to Baloch Mohla, Barohi Mohla,UC Malh-10(Near Kashmir Bismillah Hotel)	**Abdul Karim Mohla**	**Shafi Mohammad Mohla**
				24°55'32.1"N 67°14'50.3"E	**24°55'18.0"N 67°15'06.2"E**	**24°55'18.9"N 67°15'11.6"E**
				Results (dB)		
1	Noise Level	North Side	70	72.00	71.30	71.60
2		East Side		71.30	70.70	72.30
3		South Side		71.50	71.40	71.90
4		West Side		73.20	72.30	72.50

Noise monitoring was conducted at the sub-project site

Noise monitoring was conducted at the sub-project site

Figure 5-7: Noise Monitoring at the Sub-project site

5.8. Water Quality

The primary objective for conducting of sampling (Ground water quality and wastewater quality) is to identify the existing Ground water quality and wastewater quality of sub-project location. To assess the quality of water, three ground water and one wastewater sample was

collected from the scheme area, which were analyzed by the SEPA's certified lab. Paka Sarak Road: Microbiological, Physical and Chemical parameters of Ground water testing results are complying with SSDWQ limits except the Total Dissolved Solids (TDS), Total Hardness as $CaCO_3$ and Chloride (CL). Abdul Karim Mohla: Microbiological, Physical and Chemical parameters of Ground water testing results are complying with SSDWQ limits. Shafi Muhammad Mohla: Microbiological, Physical and Chemical parameters of Ground water testing results are complying with SSDWQ limits except the Total Dissolved Solids (TDS), Total Hardness as $CaCO_3$, Chloride (CL), Chemical Oxygen Demand (COD) and Residual Chlorine at the scheme site. Wastewater quality testing results are complying with SEQS limits at the Sub-project site. Results of tap water quality and wastewater quality are presented in Table 5-3.

	
Wastewater sampling was conducted at the sub-project site	Water sampling was conducted at the sub-project site

Figure 5-8: Wastewater and tap water sampling at the Sub-project site

Table 5-3: Drinking/Tap Water Analysis Results

Ground water						
S.No	**Parameters**	**Units**	**SSDWQ/SEQS**	**Location-1**	**Location-2**	**Location-3**
				Masjid Ali Al Murtaza (Construction of Metaled Road From Pakka Sarak to Baloch Mohla, Barohi Mohla,UC Malh-10)	**Jama Masjid Noor-e-Mustafa(Abdul Karim Mohla)**	**Jamia Masjid Islamia (Shafi Mohammad Mohla)**
			Recommended Values	**24°55'30.4" N 67°14'54.8" E**	**24°55'17.4" N 67°15'02.9"E**	**24°55'12.7 "N 67°15'13.4 "E**
				Test Results	**Test Results**	**Test Results**
Physical Analysis						
1	pH Value	pH (H^+)	6.5-8.5	7.52	7.68	8.13
2	Total dissolved Solids	mg/l	≤ 1000	1211	417	1169
3	Color	TCU	≤ 15	2	1	1
4	Taste	….	Non objectionable/Acceptable	Acceptable	Acceptable	Acceptable
5	Odor	….	Non objectionable	Acceptable	Acceptable	Acceptable
6	Turbidity	NTU	<5	1	1	1
7	Total Hardness	mg/l	≤ 500	669	167	638
Microbiological Analysis						
8	*Total Bacterial/ Viable Count*	cfu/ml	≤ 100	43	63	29
9	*Total coliform*	cfu/100 ml	0/100ml	ND	ND	ND
10	*Faecal coliform*	cfu/100 ml	0/100ml	ND	ND	ND
11	*Escherichia coli*	cfu/100 ml	0/100ml	ND	ND	ND
Chemical Analysis						
12	Aluminium	mg/l	≤0.2	0.01	BDL	0.02

13	Antimony	mg/l	≤0.005	BDL	0.001	0.001
14	Arsenic	mg/l	≤0.05	0.01	0.01	0.01
15	Barium	mg/l	0.7	0.02	BDL	BDL
16	Boron	mg/l	0.3	0.04	BDL	BDL
17	Cadmium	mg/l	0.01	BDL	BDL	BDL
18	Chloride	mg/l	≤ 250	531.75	241.06	432.49
19	Chromium	mg/l	≤ 0.05	0.01	0.01	0.01
20	Copper	mg/l	2	0.19	0.69	0.09
21	Cyanide	mg/l	≤ 0.05	0.01	0.03	0.01
22	Fluoride	mg/l	≤ 1.5	BDL	BDL	1.15
23	Lead	mg/l	≤ 0.05	0.01	0.02	0.01
24	Manganese	mg/l	≤ 0.5	0.01	0.01	0.29
25	Mercury	mg/l	≤ 0.001	BDL	0.0002	0.001
26	Nitrate	mg/l	≤ 50	0.06	0.13	0.09
27	Nitrite	mg/l	≤ 3	0.43	0.63	0.41
28	Nickel	mg/l	≤ 0.02	BDL	BDL	BDL
29	Phenolic Compounds	mg/l	….	BDL	BDL	0.001
30	Residual Chlorine	mg/l	0.5	0.03	0.01	0.01
31	Selenium	mg/l	0.01	BDL	0.002	0.003
32	Zinc	mg/l	5	0.13	1.3	0.29

Wastewater

Sampling Location: From Nullah of Sewerage Disposal Unit, Memon Goth. Coordinates: 24°54'57.7"N 67°14'59.1"E

S.No	Parameters	Units	SEQS	Test Results
Physical Analysis				
1	Temperature	˚C	40=<3	25
2	pH Value	(H^+)	06-Sep	7.47
3	Total Dissolved Solids (TDS)	mg/l	3500	2030
4	Total Suspended Solids (TSS)	mg/l	200	57
5	Color	TCU	150	63
Chemical Analysis				
6	Ammonia	mg/l	40	2.4
7	Arsenic	mg/l	1	0.01

8	Anionic Detergent	Mg/l	20	7.6
9	Barium	mg/l	1.5	BDL
10	Boron	mg/l	6	BDL
11	Chloride	mg/l	1000	460.85
12	COD	mg/l	150	120
13	BOD_5	mg/l	80	13.2
14	Chromium	mg/l	1	0.01
15	Discharge Flow rate	m^3/hr.	….	0.0014
16	Cadmium	mg/l	0.1	BDL
17	Cyanide	mg/l	1	0.09
18	Copper	mg/l	1	0.16
19	Iron	mg/l	8	1.67
20	Sulphate	mg/l	600	98.3
21	Fluoride	mg/l	10	0.53
22	Oil & Grease	mg/l	10	7.9
23	Mercury	mg/l	0.01	0.001
24	Nickel	mg/l	1	0.01
25	Silver	mg/l	1	BDL
26	Lead	mg/l	0.5	0.01
27	Manganese	mg/l	1.5	0.63
28	Phenolic Compounds	mg/l	0.1	BDL
29	Residual Chlorine	mg/l	1	0.06
30	Selenium	mg/l	0.5	BDL
31	Sulphide	mg/l	1	0.13
32	Zinc	mg/l	5	0.15

5.9. Topography

Maximum elevation level of Karachi is 169 m, minimum elevation level of Karachi is -2m and average elevation level of Karachi is 23m.[6]

Elevation level of sub-project location is 42m.**Figure 5-9 and Figure 5-10** shows the elevation levels of Karachi and elevation level of sub-project location respectively.

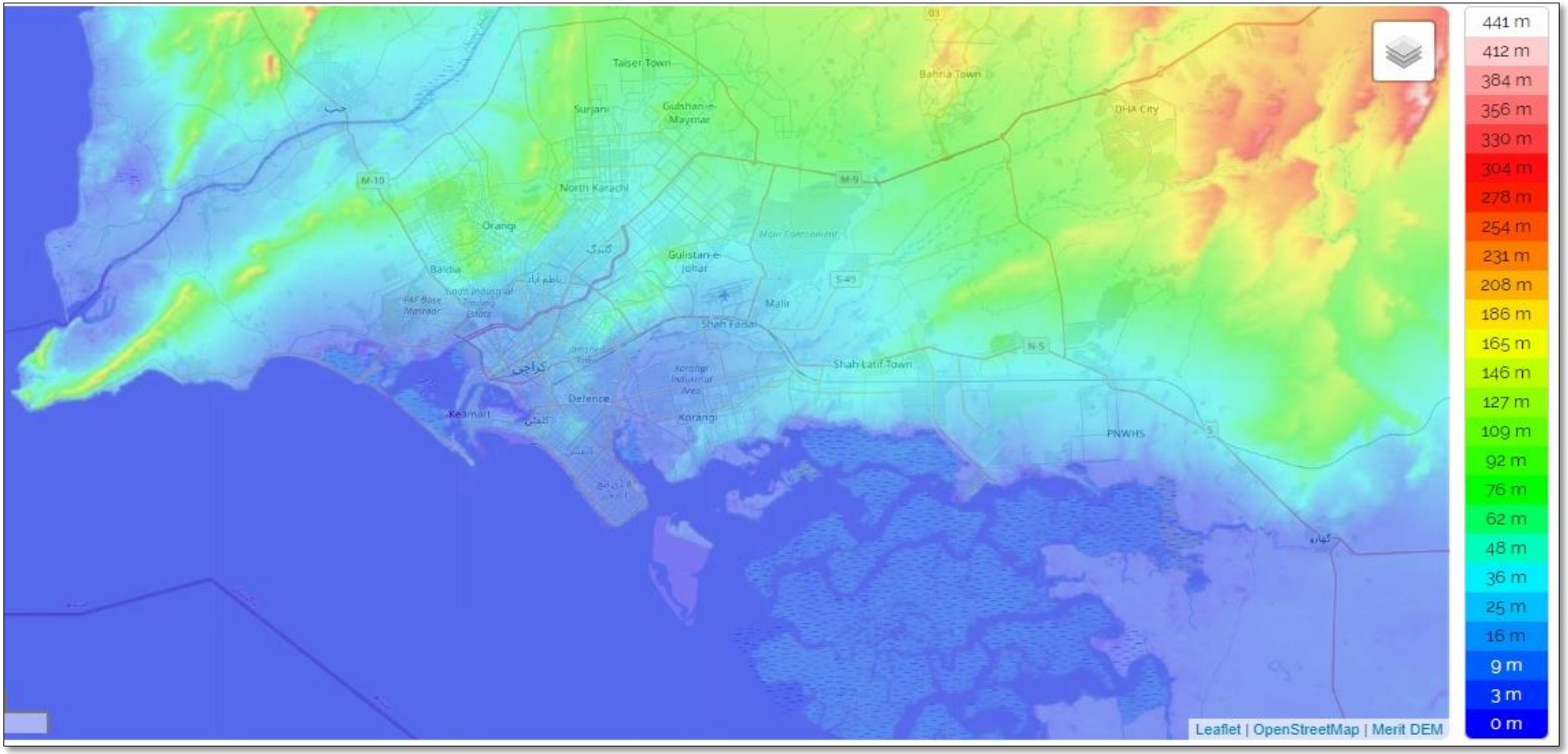


Figure 5-9: Elevation levels of Karachi.[7]

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

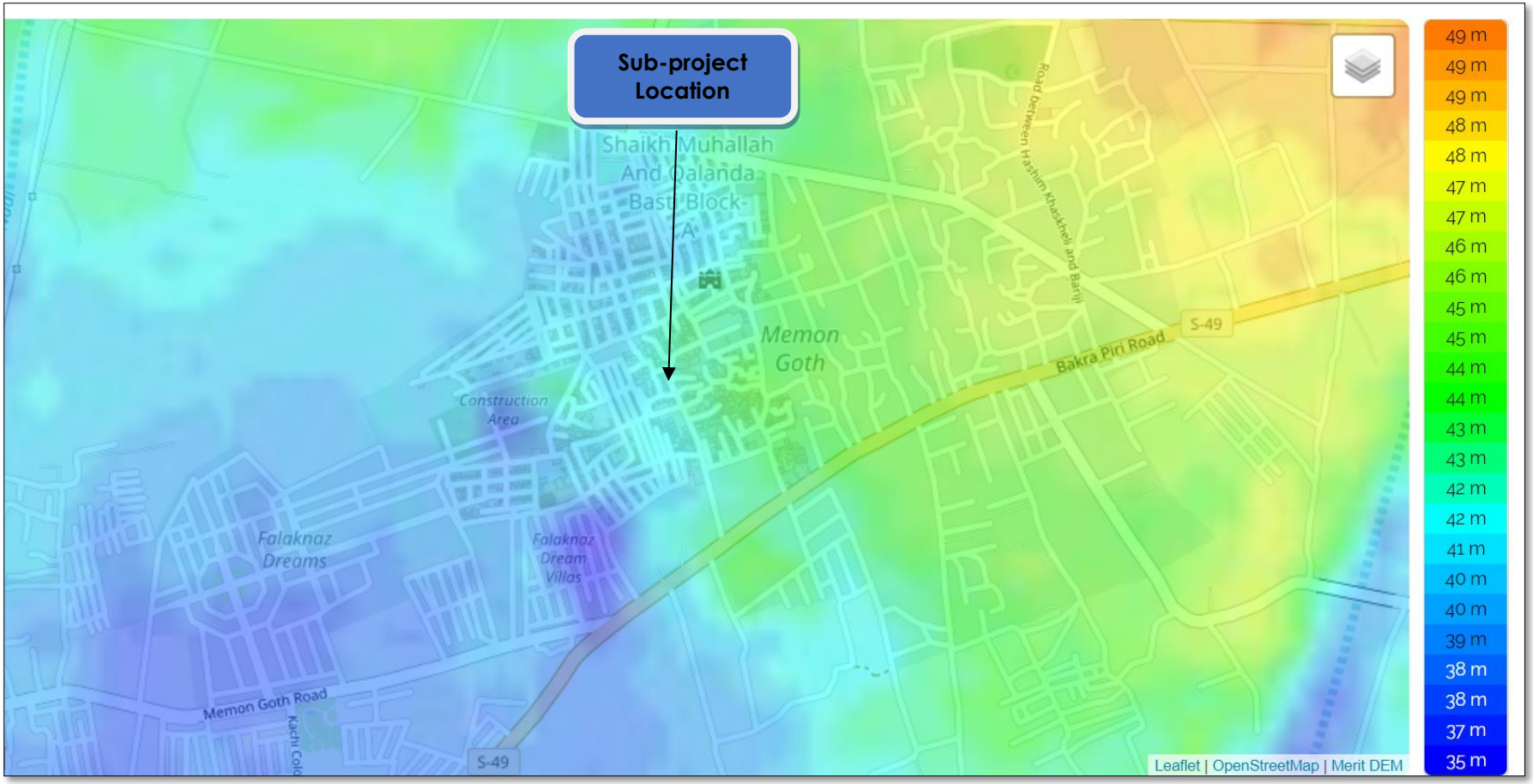


Figure 5-10: Elevation level of Sub-project location[8]

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

5.10. 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.[9]

Sub project area is located in the geological formation of alluvial deposit. **Figure 5-11 and 5-12** shows the geological map of Karachi and geological map of sub-project location respectively.

[9] 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-District Council-Watershed-of-Karachi.pdf

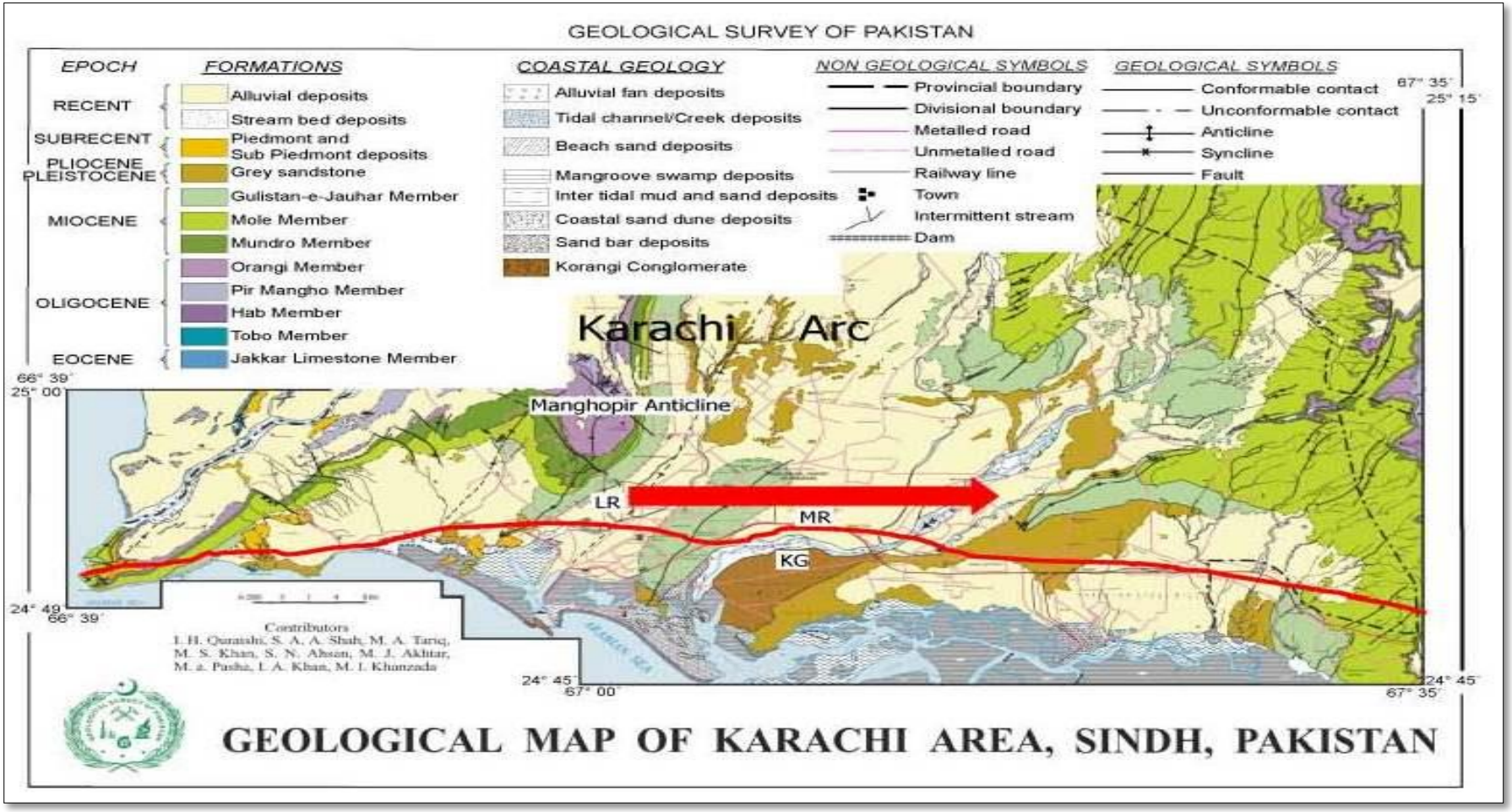


Figure 5-11: Geological Map of Karachi, Sindh, Pakistan

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

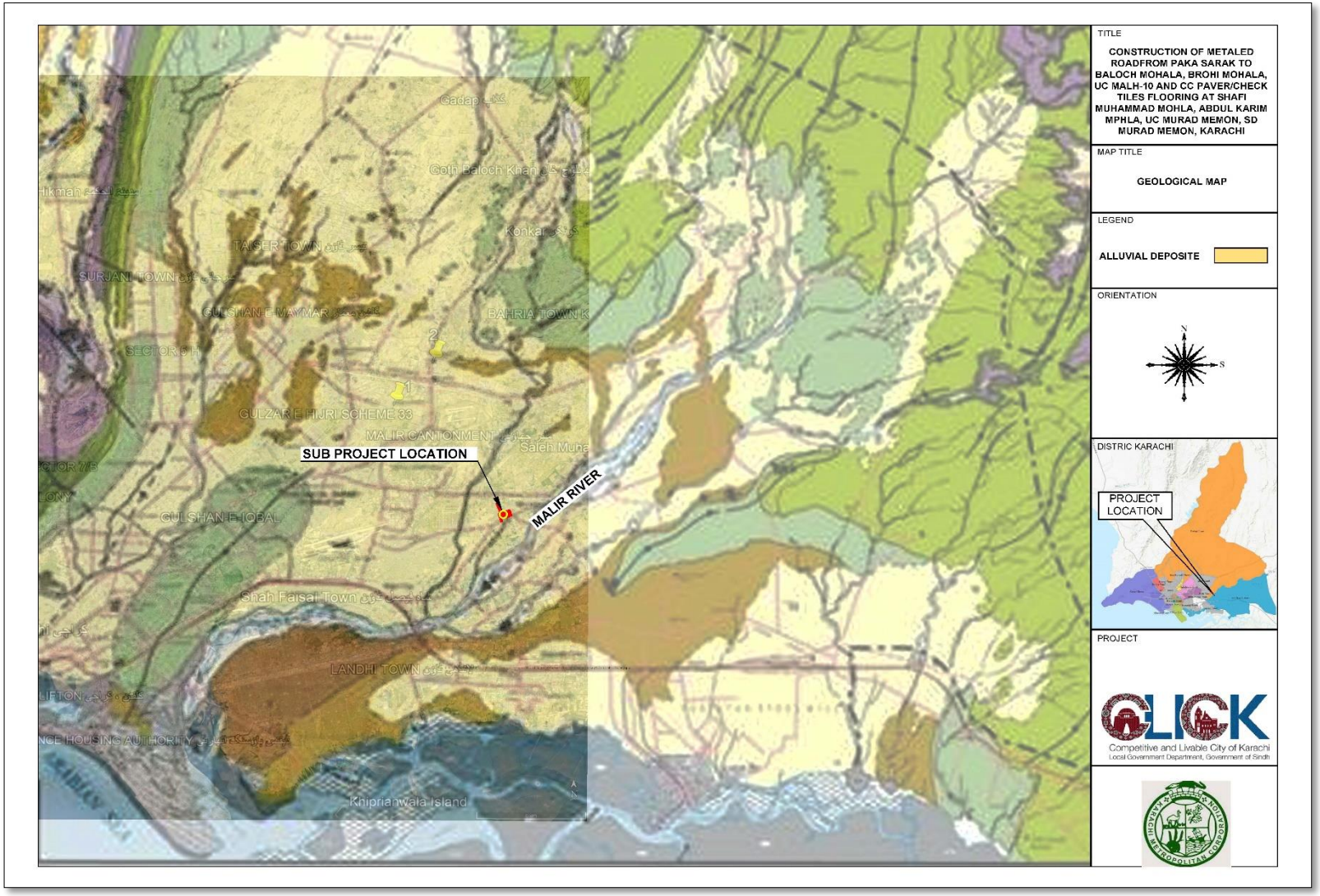


Figure 5-12: Geological Map of Sub-project Location

5.11. Water Resources

The map of water resources and bulk water supply system for Karachi is shown in **Figure-5-16**.

The sub project sites are located in Murad Memon Goth following the route of Memon Goth road towards the Malir Cant River Road in District Council of Karachi, which lies in the water supply zone-I of the Karachi Water & Sewerage Board (KWSB), as shown in **Figure 5-16.** Water distribution pipeline of are available in the sub project areas.[12]

During the secondary stakeholder consultation, KW&SB informed that groundwater Table is 60-80ft at the sub-projects area and the water is saline in nature.

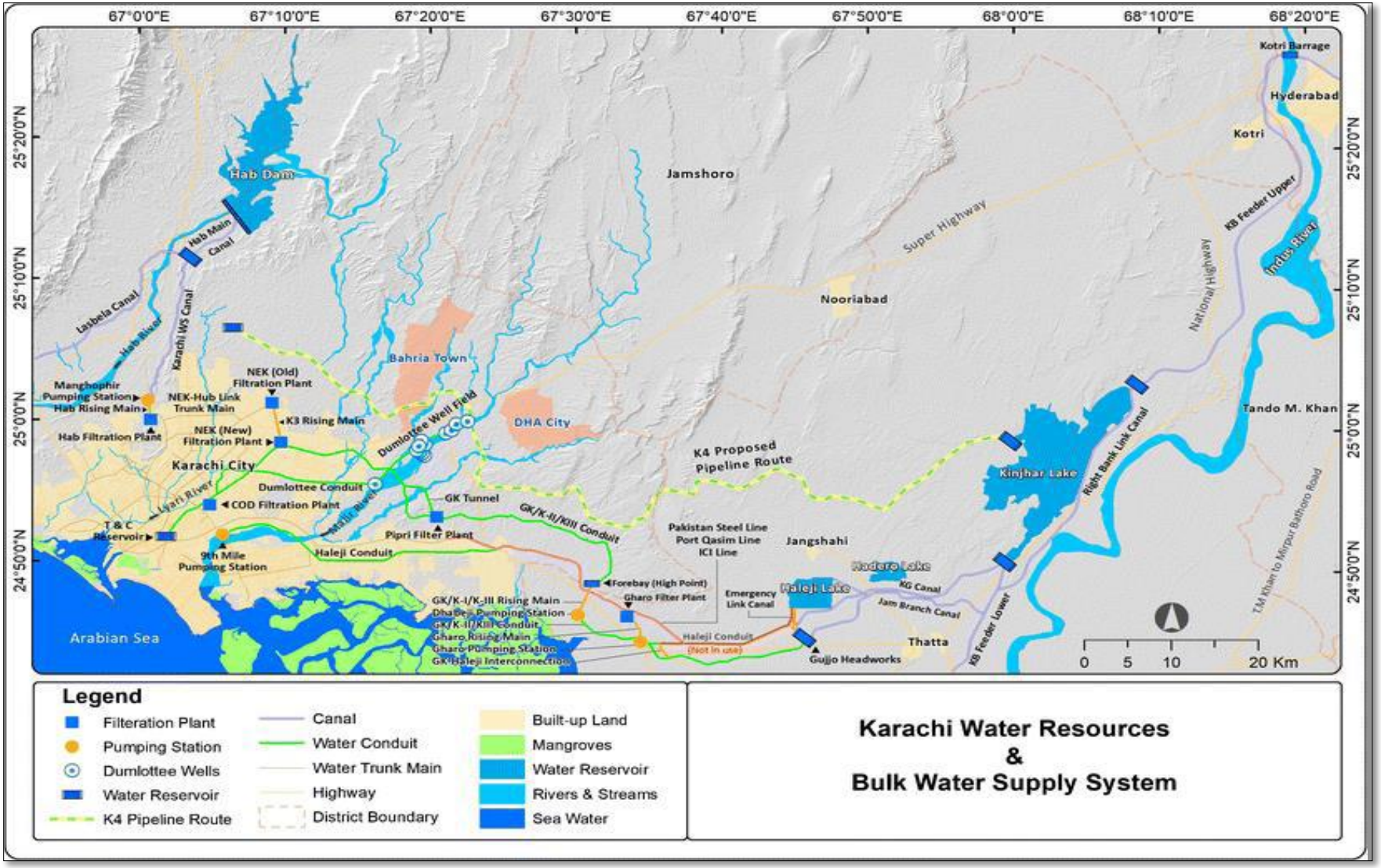


Figure 5-13: Water Resources & Bulk Water Supply System of Karachi Figure

Water is supplied to sub-project location through trunk main. The route of Major Water Trunk Mains is shown below in **Figure 5-15**.

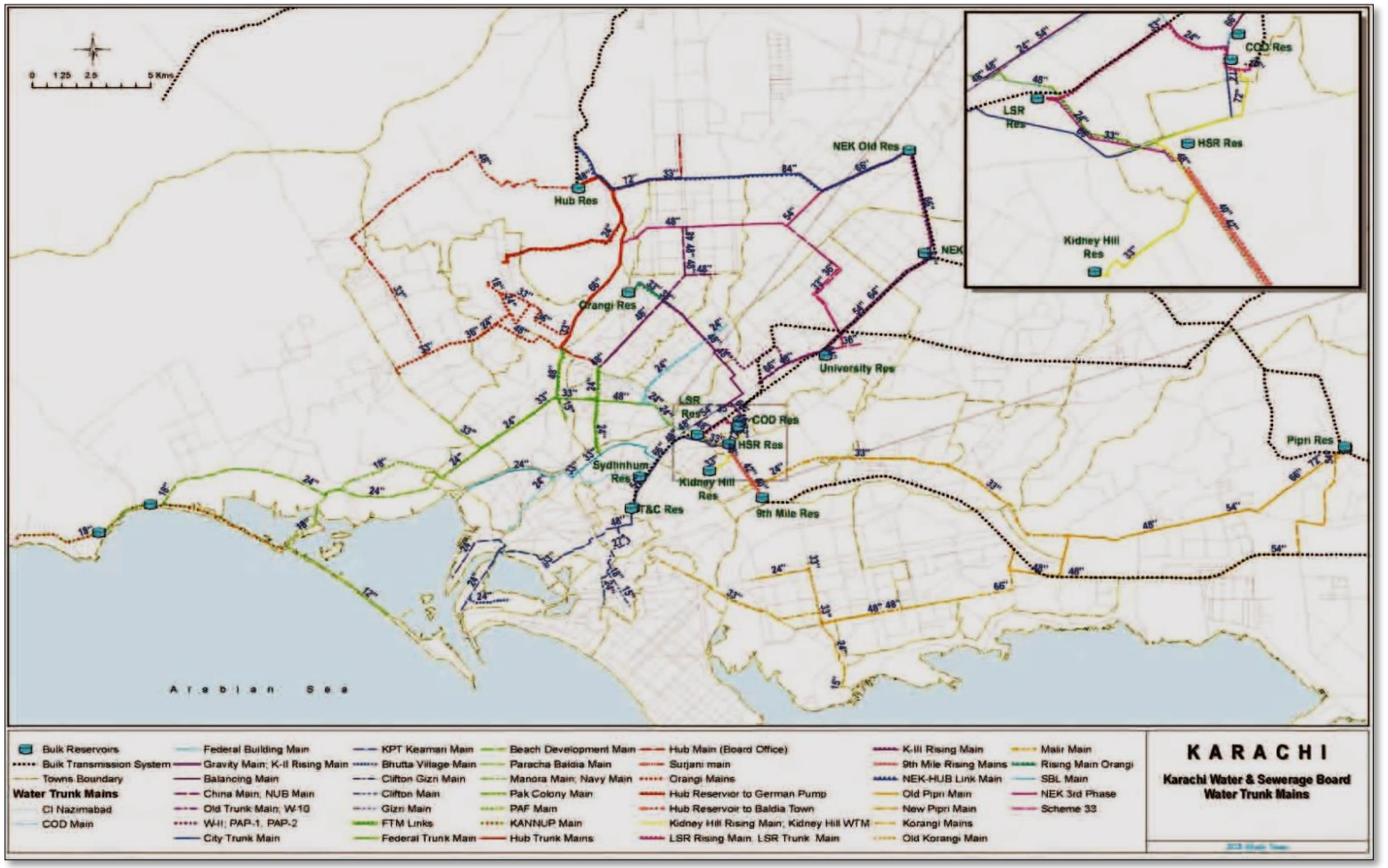


Figure 5-14: Route of Major Water Trunk Mains, Karachi

(Source: JICA Study)

The Sub-project is located in Memon Goth, District Malir of Karachi, which is lies in the water supply Zone-I of the Karachi Water & Sewerage Board (KWSB), as shown in **Figure 5-16.**

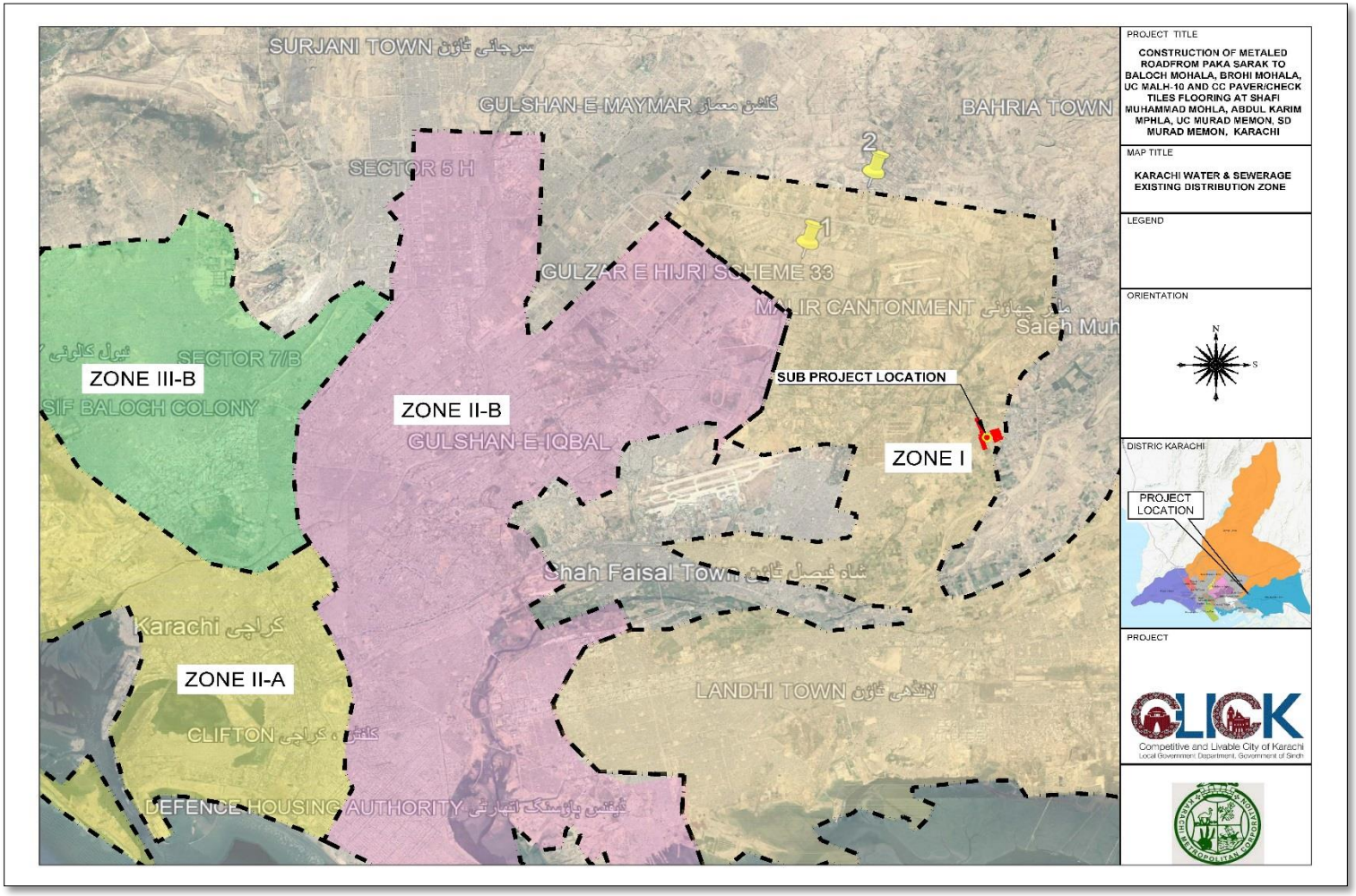


Figure 5-15: Existing Water Supply Zones in Karachi
(Source: JICA Study[10])

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

5.12. Sewerage & Drainage System

Presently, there is no surface drainage system is available in the scheme. The storm water travel towards the low lying streets from the roads and cause ponding. Moreover some quantum of storm water is also accumulated on road due to uneven surface and potholes. However, there is a provision of collecting storm water through combined storm sewer line of 15 inch diameter which is running under the road.

Manhole cover of these sewer lines are mostly damaged, especially those that are along the road crossing.
Natural drainage pattern in the sub-project vicinity is shown below in **figure 5-16**.

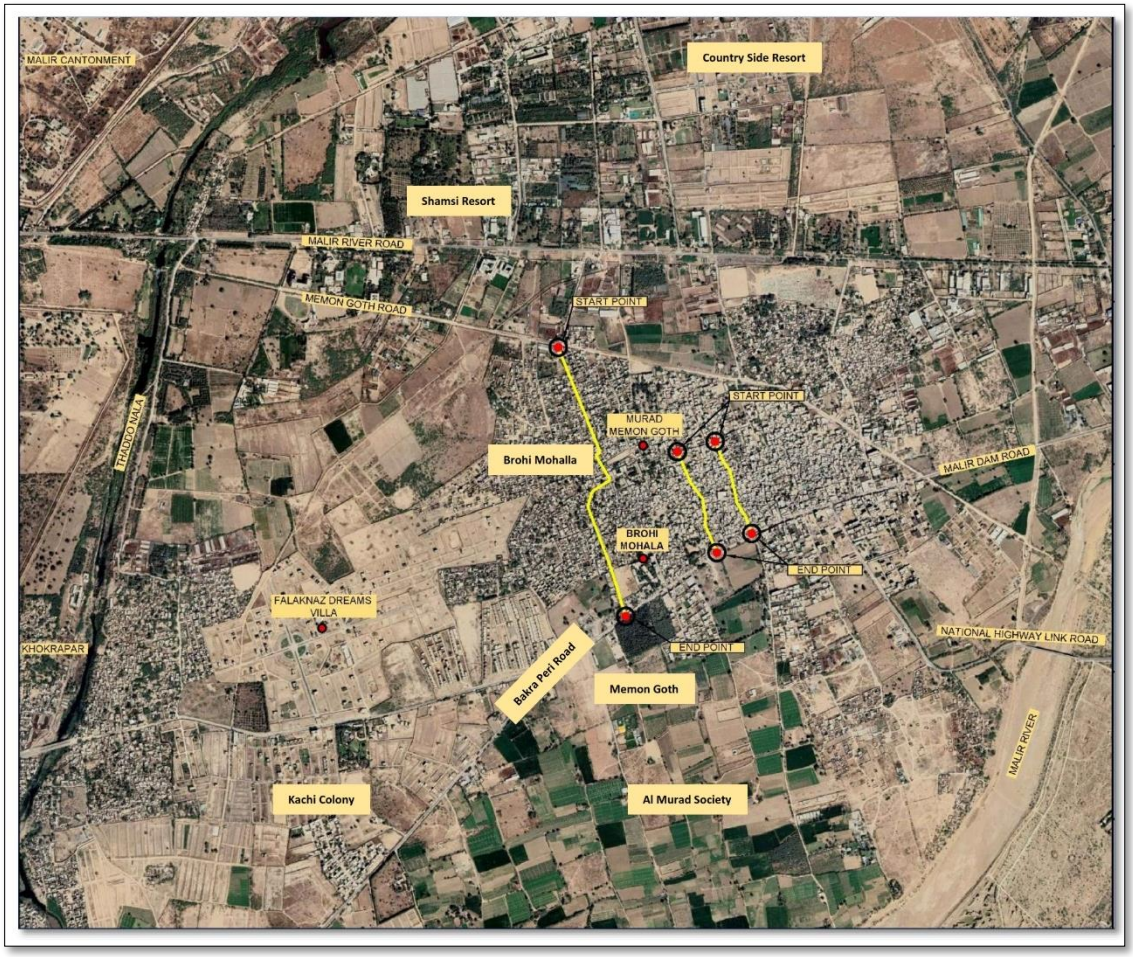


Figure 5-16: Existing condition of drainage pattern at the sub-project location

5.13. Seismology

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.[11]

[11] Environmental Management Framework of CLICK

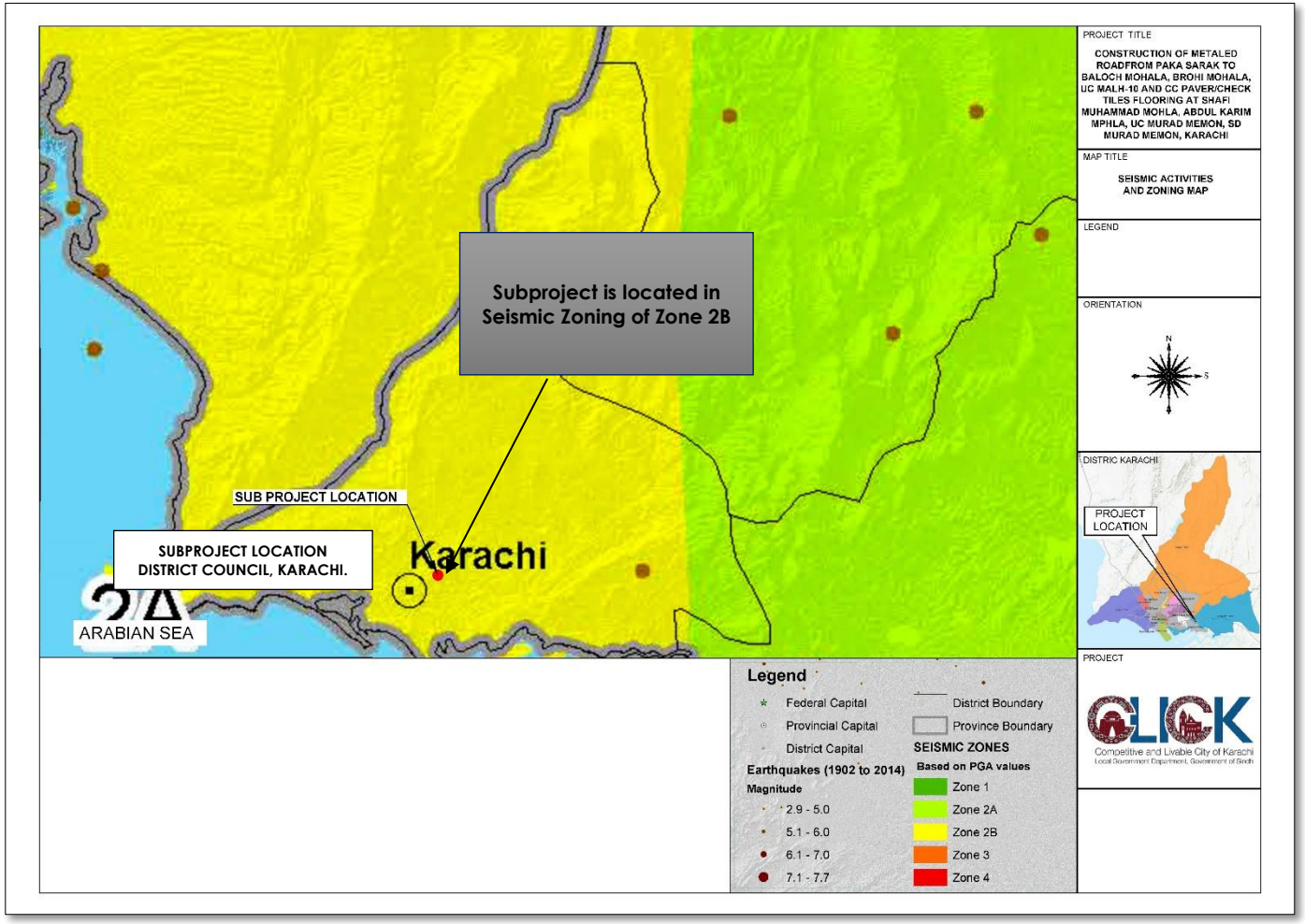


Figure 5-17: Seismic zoning map of Sub-project Location

5.14. 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.

5.15. Ecological Environment

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

5.16. Flora

Sub-project area is covered with flora species of *Conocarpus erectus, Prosopis juliflora Azadirachta indica, Delonix regia* and *Calotropis procera.*

During the Rehabilitation work of sub-project, any trees will not be cut down.

Sub-project species of flora are classified according to IUCN Red List, 2021 as shown under the **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.	*Conocarpus erectus*	Buttonwood	Few species at sub-project site	LC (Global)
2.	*Prosopis juliflora*	Mesquite	Dense and Scattered species at sub-project site	NA
3.	*Azadirachta indica*	Neem	Few species at sub-project site	LC (Global)
4.	*Delonix regia*	Gul Mohar	Few species at sub-project site	LC (Global)
5.	*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.*

Calotropis procera

Azadirachta indica

(Aak)	(Neem)
	
Prosopis juliflora (Mesquite)	*Delonix regia* (Gul Mohar)

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

5.17. 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)* 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.*

Canis lupus familiaris
(Domestic Dog)

Equus asinus
(Domestic Donkey)

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

5.18. Socio-Economic Overview

The socio-economic profile of the subproject area is a comprehensive review of the socio-economic conditions of the sub project area. The socio-economic profile is based on literature review, site visits and consultations with major stakeholder groups. This socio-economic profile provides 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 discussed.

5.19. Socio-Economic features

The residents of the sub-project road fall under the lower income category, mostly are engaged with agriculture, private jobs, embroidery shops, restaurants, furniture shops, general stores, and vegetable & fruit shops. Women residents also do not have many opportunities to work from home.

5.20. Demographic Characteristics'

Karachi is one of the most populous cities in Pakistan, having a population of 16.1 million as recorded in 2017. The project lies in the sub-urban area of Murad Memon Goth, Karachi. The impact of the project will be of high value because the area is densely populated.

5.21. Population

Population of Murad Memon division is detailed below in the **Table** [12]

Table 5-8: Population Characteristics of Murad Memon Subdivision, District Council Karachi (2017)

Admin - Unit	Area (Sq. Km.)	POPULATION - 2017								1998-2017 Average Annual Growth Rate (%)
		All Sexes	Male	Female	Transgender	Sex Ratio	Population Density Per Sq. Km.	Urban Proportion	Average Household Size	
MURAD MEMON SUB-DIVISION	**195**	**331,326**	**174,153**	**157,157**	**16**	**110.81**	**1699.11**	**60.84**	**5.14**	**2.3**
Rural	**-**	**129,761**	**69,080**	**60,679**	**2**	**113.84**	**-**	**-**	**5.05**	**3.45**
Urban	**-**	**201,565**	**105,073**	**96,478**	**14**	**108.91**	**-**	**-**	**5.20**	**1.68**

Source: Population Census Report – 2017, Federal Bureau of Statistics

5.22. Ethnic, religious and Linguistic Diversity

The residents of sub project area are mostly low-income Urdu Speaking, Punjabi, Sindhi, Pashto, Balochi and Saraiki. Religiously are mostly Muslim.

5.23. Health

Rural Health Center (RHC) at Murad Memon Goth – Hospital, Memon Goth Murad Memon Goth Gadap Town, Karachi, and Sindh is present in the vicinity of sub-project location. Meanwhile private clinics are also present in nearby vicinity of sub project for local. Malaria and typhoid diseases are the most common health problems of the area.

[12] https://www.pbs.gov.pk/sites/default/files//population_census/results/09701.pdf

Figure 5-20: Pictorial View of Rural Health Center (RHC) at Sub-project location

5.24. Education

Government and private schools are present in the vicinity of sub-project location.

5.25. Housing

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

5.26. Recreational facilities

The recreational facility available in the sub-project area is college playground.

College playground at the Sub-project Location

Figure 5-21: Pictorial View of College playground at the Sub-project Location

5.27. Employment

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

5.28. Public transport

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

5.29. Affected Structures and Settlements

The residential structures and residential settlements in the vicinity will not be affected as no land acquisition is required. Since there is no land acquisition, no shelter or residential land is required to be resettled and no agriculture or productive assets that exist in the sub-project area will be affected. No businesses or enterprises will be affected due to the sub-project activity.

As per social management framework of CLICK;

- CLICK will not consider any Category "A" sub projects.
- For any category "B" sub project, an ARAP will be prepared during implementation and cleared by the Bank before initiating the civil works under the sub project.

5.30. Archaeological, Historical, and Cultural Resources

There were no identified archaeological, historical, and cultural resources along the project route that will be impacted by the road construction. However; Chance Find procedures will be applied in case of any finding.

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 which activities of the proposed sub-project are likely to result in significant negative social effects, with a view to propose appropriate impact mitigation measures for those activities to ensure sustainability of the subproject and minimize the impacts.

In addition, 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 30th May 2021with people of the area as part of the environmental and social screening study. Another round of Primary and Secondary Consultation Meeting were held on 12th November, 2021 for preparation of this ESMP. The outcome of the consultations and the highlighted social considerations are adhered in decision making and in carrying out the sub-project activities.

Information dissemination was ensured for the proposed project and complaint registration number has also been provided on District Council social media and on banners at the project site.

6.2. Social Screening Process and procedures

The purpose and methodology for the screening process is aimed at determining which activities are likely to result in significant negative social effects, with a view to determine appropriate impact mitigation measures for those activities to ensure sustainability of the subproject. The outcome of the screening process will determine the extent of social considerations required, prior to making a decision for carrying out the activities of the Project related to construction and rehabilitation works.

6.3. Public Consultations and Disclosure

Public consultations need to be undertaken for projects of this nature as the WB's environmental and social framework requirements. The primary purpose of the consultations is to present the proposed road development, describe issues and concerns that the people, stakeholders, and concerned parties in the impact area may have relevance to the proposed road development Project. The informal community consultations were held during site visits, while the formal Public Consultations were also held at the project site to compile the opinions, concerns, and issues of the stakeholders for consideration in the implementation of the Project.

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 general public in providing their reservations and feedback on a proposal to be considered in the decision-making process.

The overall objectives of the consultation process are as follows:
-Build trust and promote collaboration between the citizens and service providers;

-Provide information about the project and its potential impacts to those interested in or -affected by the project, and solicit their opinion in that regard;
-Manage expectations and streamline misconceptions regarding the Project;
-Ensure participation and acceptance of the project by the citizens; and
-Promote 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 subproject and propose mitigation measures that minimize the negative project impacts identified.

Primary stakeholders are those who have a direct staked in the project, which includes residents, commercial entities and institutions residing in the 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 project. Important stakeholders include as K-Electric (KE), Karachi Water and Sewerage Board (KW&SB), Sui Southern Gas Co. Ltd. (SSGC), KDA, Pakistan Telecommunication Ltd. (PTCL) and Sindh Environmental Protection Agency.

6.6. Primary Stakeholders' Consultations

Following consultations were conducted with primary stakeholders.

Table 6-1: Consultation sessions

Date	Location	Stakeholder Consultation sessions
30th May, 2021	At Sub-project Location	Local Male Residents were consulted by District Council and consultant team. Attendance is annexed at Annexure C
12th November, 2021	At Sub-project Location	Male & female Residents were consulted by District Council, PIU and consultant team Attendance 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 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 influx of labor during the construction stage of the project.

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

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 traffic congestion, project timeline, 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 12 Nov 2021 at Sub-project Location		
S.No	**Stakeholder Feedback**	**PIU/District Council Response**
1	The residents along the project road showed great concern about the existing condition of road. They claimed that the bad condition of the road has restrained the access of residents to their destinations and thus has reduced the business activity in the area.	The sub-project is a high priority of CLICK team, and will be completed on urgency basis to facilitate the locals of the District Council area.
2	Day by day the world is enhancing the infrastructure, but their local area is facing a lack of basic facilities including poor roads, which should be rehabilitated.	Acknowledged, and CLICK really understand the need for the proposed road.
3	Resident and religious person of the area, shared that this is the only road, which connects their local area to city, so it is a very important road for us. Also, local are facing robbery issues and people are not ready to travel in night time on this road. In addition, females are also facing various challenges in their movement for study and job-related activities.	Social Safe Guards Specialist of CLICK responded that, idea is conceived on the basis of same criteria to facilitate the locals particularly the females and the tourists.

4	Residents also raised issues regarding rain floods water accumulated along the road way sides for months due to the existing poor condition of the road, which creates hurdles for the residents.	XEN DC briefed that road related works and issues will also be resolved with the development of the proposed sub-project.
5	Community asked whether any demolition will occur due to rehabilitation of the road.	PIU informed that as per the proposed design, no temporary or permanent structure will be demolished during implementation as the existing road ROW has sufficient space.
6	Local residents also requested for providing speed breakers on the road to reduce the speed of vehicles due to densely populated areas along the project site.	The PIU ESS and technical team briefed that road design will include properly designed traffic control system, markings signage's also other health and safety provisions for both traffic and local residents of the community living around the project site to ensure their safety.
Male & female Residents were consulted by District Council, PIU and consultant team on 12th November, 2021.		
S.No	**Stakeholder Feedback**	**PIU/District Council Response**
1.	Sewerage network should be also addressed before taking the metalled road.	Topographic survey of Sub-project has been conducted to analysis this kind of issues which will be dealt accordingly.
2.	Is there a provision of Operate and maintenance of all services in this project?	This sub-project is only for the rehabilitation of existing road, however, District Council Karachi will carry out O/M services through their annual fund.
3.	What is right of way and Scope of rehabilitation work?	Rehabilitation work will be carried out on available right of way of road and street.
4.	Open Manhole issue should be addressed in this project.	Provision of Manhole is proposed in this sub-project.
5.	Children are facing the problem during 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.
6.	Bad sanitation condition in the area should be resolved.	It will be addressed accordingly. Community should not dump the solid waste on the road. It will be resolved via community support and District Council cooperation.

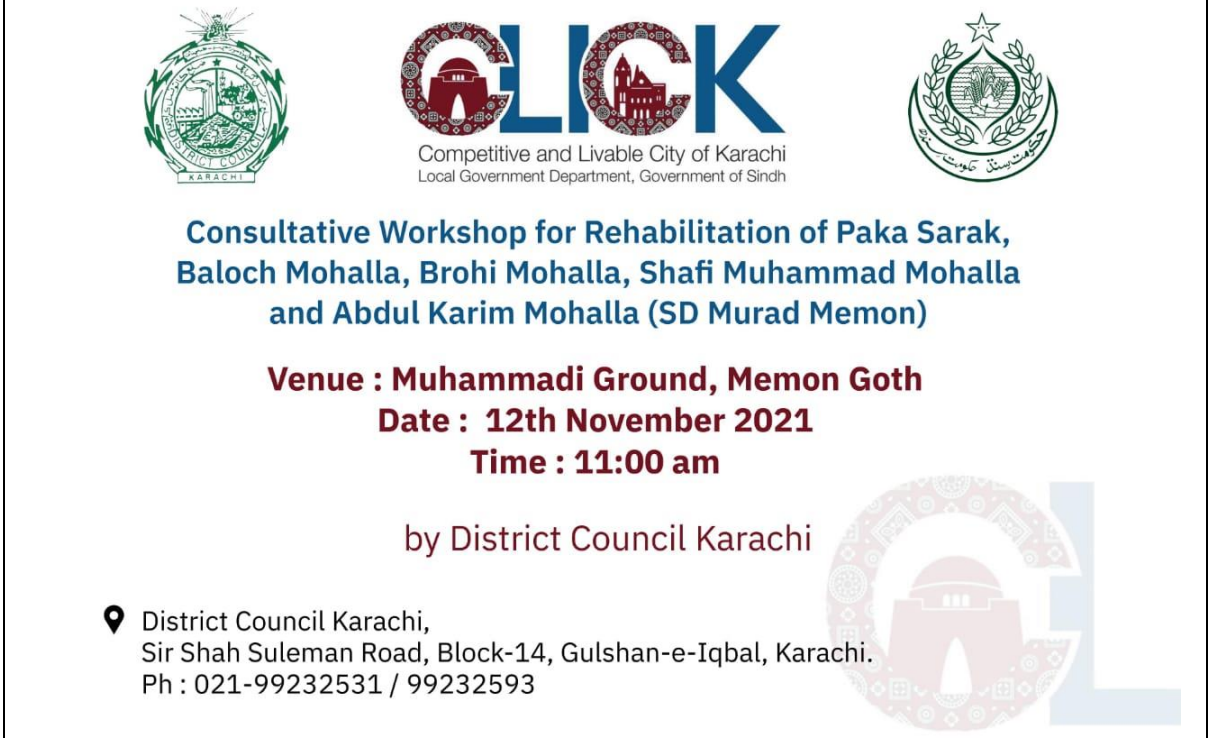
During the consultation process about the proposed sub-project, people expressed keen interest in the proposed sub-project. People, in general, were very enthusiastic about the benefits of the sub-project for the residents and daily commuters in particular. People pledged to extend all types of support 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

<table>
<tr><td colspan="2">Community Consultation # 01: Community consultation meeting at sub-project site.</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Environmental and Social Consultant and Focal Person Briefing about the Project</td><td>Social Focal Person Briefing about the Project</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Participants giving views and ideas for the scheme and problems</td><td>Environmental and Social Consultant and Focal Person Briefing about the Project</td></tr>
</table>

Figure 6-2: Community Consultation meeting at Muhammadi Ground, Memon Goth

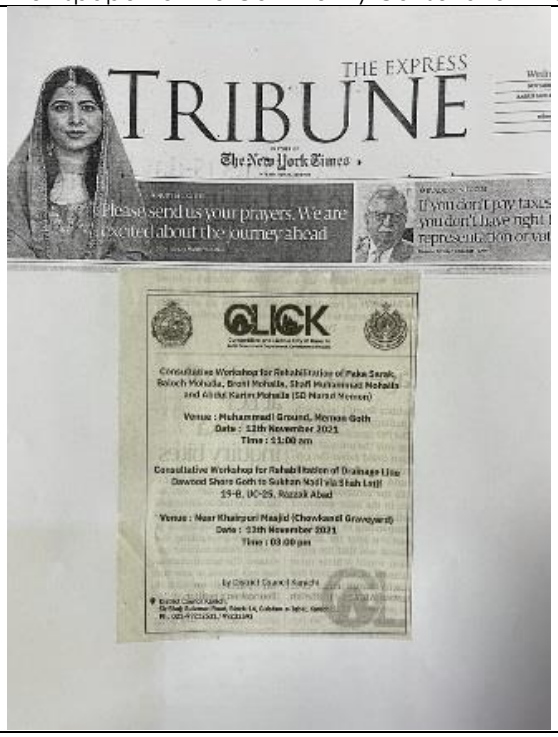
Community Consultation # 02: Community consultation meeting at Muhammadi Ground, Memon goth



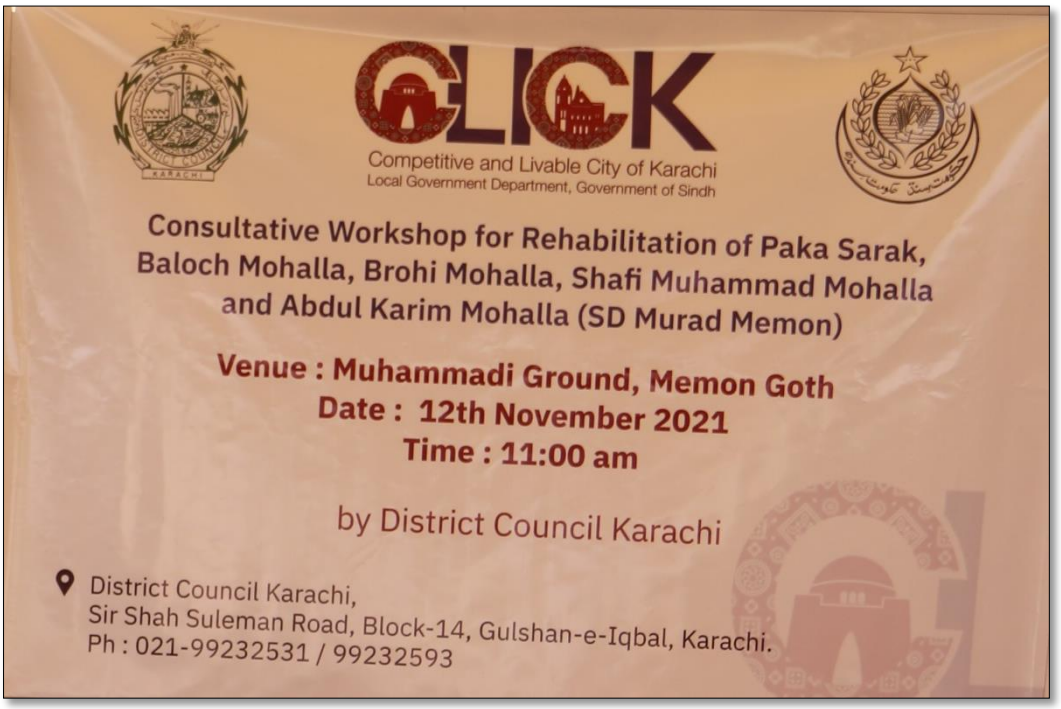
A view of Banner showing workshop details in English language.

A view of Banner 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



A view of Banner showing workshop details in local Urdu language at Community neighbhour

Administrator District Council Briefing about the Project

PIU Social Safeguard Specialist Briefing about the Social Policies of the World Bank

PIU Environment Safeguard Specialist Briefing about the environment Policies of the World Bank

Community feedback on the sub-project

Community feedback on the sub-project

Community feedback on the sub-project

Commnity participation in consultation workshop

Female particpiation in Consultation workshop

6.7. Secondary Stakeholders Consultations

Following consultations were conducted with secondary stakeholders.

Time & Date	Location	Stakeholder
11:30 AM, 11th November, 2021.	District Council Karachi Head Office ST-05, Sir Shah Suleman Road, Gulshan-e-Iqbal, Karachi City, and Sindh.	Govt. line departments. Attendance is annexed (C)

Following are the details of consultative meetings

Consultative Meeting of Stakeholders
"**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** ".

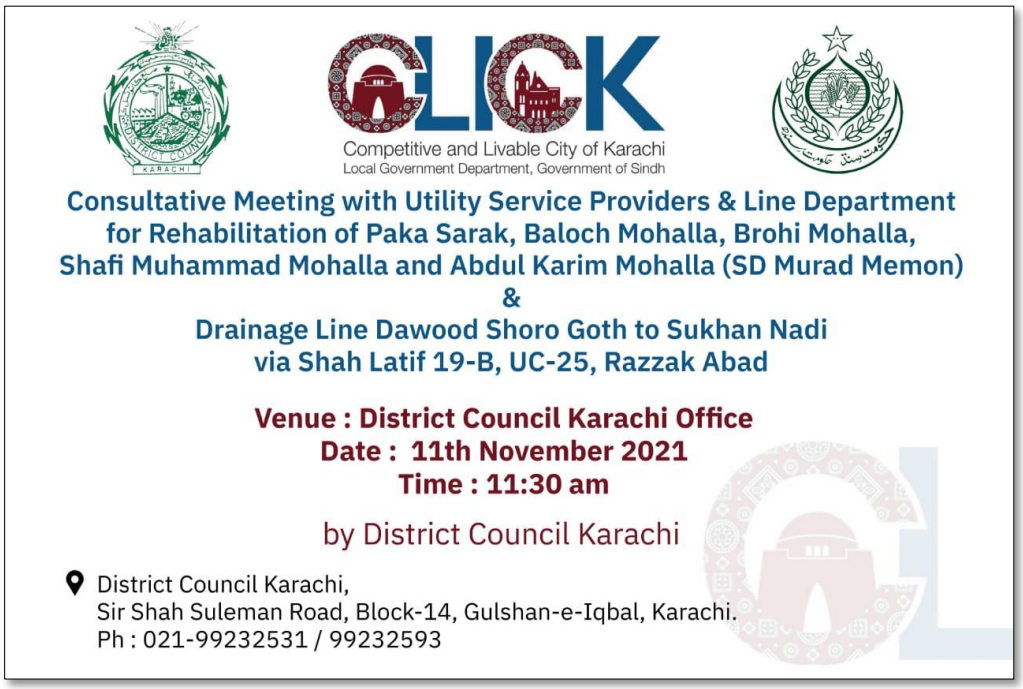
DATE & TIME: 11th November, 2021. 11:30 AM.

LOCATION: District Council Karachi Head Office ST-05, Sir Shah Suleman Road, Gulshan-e-Iqbal, Karachi City

OBJECTIVE: Project Brief and Consultative Meeting with Stakeholders

S.No	Stakeholder	Stakeholder concerns	PIU/DCK/Consultant Response
1	Karachi Water and Sewerage Board (KW&SB)	He asked the scope and details of Sub- Project	The Pakka Sarrak road stretches over 1.2 km in length, Streets required the cc paver/check tiles flooring at haji Abdul Karim Mohla and haji Shafi Mohammad Mohla, which are stretches over 0.55 km and 0.45km in length. Proposed design and Layout Plans was shared with them in hard copy format.
2.	Sindh Environmental Protection Agency (SEPA)	This is good initiative to call all line department for rehabilitation of the Sub-project.	Acknowledged. Yes trees will be protected accordingly.
3.	Karachi Electric (K.E)	Street Lights are not in our domain. Street Lights belongs to District Council Proposed design and Layout Plans should be share with us. We will marked the underground lines of K.E. at the sub-project site.	Acknowledged; Street Lights belongs to District Council. Proposed design and Layout Plans will be shared with the K.E.
4.	Pakistan Coast Guard	This area is not in the jurisdiction of Pak 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



Administrator explaining the sub project details with line departments

Consultant Briefing about the sub project details with line departments

Line Departments are giving their feedback on the sub-project

6.8. Consultative Meetings' Outcome

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

The local residents were happy that this project will be undertaken because they felt a need for this sub-project especially because the proposed road is in a deteriorated state, and it also serves the local area's traffic. Regarding the disruption due to construction activities, it was communicated that there may be some short-term inconvenience to the local commuters / road users due to rehabilitation of the existing road, but it will be for a very short period if compared with its long-term benefits to the local citizens.

Chapter 7. IMPACTS AND MITIGATION MEASURES

The impacts associated with the proposed sub-project activities are impacts of temporary traffic congestion, 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 business/livelihoods

During rehabilitation of the sub project livelihood of only two PAPs will be affected. Following mitigation measures will be adopted to reduce the adverse impacts on their livelihoods.

Mitigation Measures

- The Two PAPs personal details and contact number has been noted.
- They will be helped in relocating their cabins 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 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.
- Adequate personnel protection equipment must be provided to workers.
- Frequently water sprinkling must be carried out at the sub-project site.
- 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.
- Worker 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 / diversion plan is part of the ESMP to be implemented by contractor (refer to Annex D); Construction work will be carried out on only half carriageway at any time while the other half will remain open for traffic along with provision of necessary traffic control devices and safety measures including road signs & markings, traffic barriers, markers and flash lights.

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 on the road for commuters and ensure proper access management for the local community.
- Appropriate safety precautions will be taken when transporting any large equipment at the project site.

7.1.4 Damage to Cultural Heritage

- The construction activities will not cause any damage to cultural landmarks or heritage sites as no such heritage sites or landmarks are found in the vicinity of the sub-project.

Mitigation Measures

- Pollution such as noise and dust generation will be avoided while working at the project site.
- Contractors would be trained to address privacy issues and behave ethically.
- The contractor's staff must be trained enough to respect the local norms.
- Contractors have to follow Chance Find Procedure that is **Annex (E)** in 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.
- The peripheral road carries less traffic, though during construction it may cause hindrances for the community. However, regardless of where the construction takes

place, all the work zones should be cordoned off, and traffic shifted away at least with traffic cones, barricades, and temporary signs (temporary "STOP" and "GO").

- The proposed area is congested, there should be sufficient signage to warn of dangers and hazards on a construction or worksite. Signs should be clear and accompanied by ropes, cones, and other equipment to cordon off dangerous areas.
- Conduct worksite inspections daily to identify any potential dangers or hazards. Dangers and hazards should be cordoned off immediately.
- 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 road has no requirement for tree cutting during the project execution.

Mitigation Measures

- The contractor will avoid cutting any tree present in the 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.
- Limiting vehicular transport to defined roads as to prevent unnecessary injury and habitat destruction.

7.2.3 Dust Generation

- The construction activities during the road rehabilitation will generate dust in the 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 road work is limited to rehabilitation work on the existing road. 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 road. 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 Asphalt Emissions

- Relatively smaller quantum of road work doesn't require establishment of asphalt plant, since it is economically not feasible for the contractor, therefore, ready to use asphalt mix will be brought in. As the asphalt mix will be brought from the outside therefore, there will be negligible fugitive emissions.

Mitigation Measures

- Proper use of Personal Protection Equipment (PPEs) i.e. face masks, safety goggles, gloves and gum boots to safeguard labors against the Asphalt emission as a mitigation measure will be taken by the contractor during the project execution on site.

7.2.7 Generation of Construction Debris

- Due to the civil works undertaken for the road rehabilitation, construction debris will be generated for which proper disposal at designated locations 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 storm water 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.

7.2.8 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 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.
- Equipment refueling and maintenance will be limited to designated areas at least 30 meters (100 feet) from any down gradient drainage.

7.2.9 Impact on Surrounding Water Bodies

- The construction activities will take place near sewerage lines and drains, which are present in the surroundings of the site. 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.

7.2.10 Disturbance to Biodiversity

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

7.1.1. 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 adequate safety measures will be required during the rehabilitation of road and drainage will be observed and maintained as per the standard procedures and requirements.

The contractor's 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.
- All personnel entering the manhole during cleaning or working on sewage manholes should have proper safety equipment. There should be forced ventilation by using air blowers on manholes upstream of the concerned length. All such personnel should use safety harness fastened at the other end and another crew member should monitor crew who has entered the manhole.
- Ensure ventilating sewer line by opening two or three manholes on both sides of working sewer line for about one hour, and use of gas masks while entering the sewer line. Placing at least two helpers at the top and sending signals at every few minutes to the person in the manhole.
- Lowering all the tools to the workman in bucket and ensuring that no tools are located near the manhole edge that could fall in to the manhole and injure the workman.
- Using lighting equipment that are explosion and fire proof.
- Ensure proper Implementation of COVID-19 Standard operating procedures (SOPs) in in true spirit across the construction activities or sites (refer to annex F).
- 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.
- 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 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.

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 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 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 Environmental and Social Screening checklist.
iii. Based on the prevailing scenario as mentioned in Environmental and Social screening checklist, 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

8.4 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 and SEPA.

Project Implementation Unit (PIU)

- The overall responsibility of compliance of the Mitigation Plan and compliance reporting to the World Bank and SEPA 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 take care of the overall environmental and social aspects of the project activities. The ESC will actively support the ESMP Team in environmental monitoring and prepare compliance reports and submit to PIU for further submitting to the World Bank and SEPA 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)

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 compliance of ESMP during construction phase by the contractors. The ESC may also hire the services of independent environmental consultancy firm as Third Party for Third Party Validation (TPV).

8.5 Operational Phase Monitoring

The overall responsibility of compliance of the operational phase will be with the District Council. In the organizational structure of the District Council Karachi the monitoring and compliance of the operational phase of the mitigation plan will be under the responsibilities of the Director General and Senior Director. These personnel will then report to the Municipal Commissioner for the compliance and monitoring of the mitigation plan.

The Director General, Senior Director, and Municipal Commissioner of the District Council will have the leverage to hire the services of a competent (SEPA approved) environmental laboratory to monitor the environmental parameters at the project site. These compliance reports will be submitted by the Director General and Senior Director of the District Council to the Municipal Commissioner and District Chairman respectively at set frequency (biweekly). The laboratory reports will then be a part of these compliance reports. The Municipal Commissioner of the District Council will submit the operational phase MP compliance reports to PMU for further submission to the World Bank.

8.6 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 and Sindh Environmental Protection Agency (SEPA) 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
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	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 Parameter's w.r.t

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
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.				SEQS will be monitored and reported by the construction contractor to PIU CLICK for onward submission to SEPA. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to SEPA and the World Bank.
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 by the contractor	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	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

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
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. Proper use of Personal Protection Equipment (PPEs) i.e. face masks, safety goggles, gloves and gum boats to safeguard labors against the Asphalt emission as a mitigation measure will be taken by the contractor during the project execution on site.		environmental laboratories		E&S Parameter's w.r.t SEQS will be monitored and reported by the construction contractor to PIU CLICK for onward submission to SEPA. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to SEPA and the World Bank.
Solid and Hazardous Waste				
The debris (rejected material) produced during construction would be disposed-off in government approved/allocated disposal sites. Leftover material would not be dumped into storm water 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.	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

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
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. 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:				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 to SEPA. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to SEPA and the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
• 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. 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.				
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.	E&S Team of Contractor	Visual inspection Water quality testing as per Sindh standards for drinking water quality.	Before initiation of construction Monthly	Monitoring Responsibility (MR) Focal Person of District Council , Environmental Safeguard Specialist

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
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		Wastewater quality as per SEQS		(ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor Reporting Responsibility (RR) Monthly reporting compliance status of E&S Parameter's w.r.t SEQS/SSDWQ will be monitored and reported by the construction contractor to PIU CLICK for onward submission to SEPA. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to SEPA and the World Bank.
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.	E&S Team of Contractor	Visual inspection Record checking	Monthly	**Monitoring Responsibility (MR)** Focal Person of District COuncil,

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
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				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 to SEPA. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to SEPA and the World Bank.
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.	E&S Team of Contractor	Visual inspection	Monthly	**Monitoring Responsibility (MR)** Focal Person of District Council,

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
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.				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 to SEPA. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to SEPA and the World Bank.
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	E&S Team of Contractor	Visual inspection Availability of PPEs Record of EHS and COVID-19 SOPs implementation	Monthly	**Monitoring Responsibility (MR)** Focal Person of District Council,

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
disinfection, quarantine management, area access management, PPEs, emergency response, and drills; Only skilled workers will be allowed to work at the construction site; All personnel entering the manhole during cleaning or working on sewage manholes should have proper safety equipment. There should be forced ventilation by using air blowers on manholes upstream of the concerned length. All such personnel should use safety harness fastened at the other end and another crew member should monitor crew who has entered the manhole. Ensure ventilating sewer line by opening two or three manholes on both sides of working sewer line for about one hour, and use of gas masks while entering the sewer line. Placing at least two helpers at the top and sending signals at every few minutes to the person in the manhole. Lowering all the tools to the workman in bucket and ensuring that no tools are located near the manhole edge that could fall in to the manhole and injure the workman. Using lighting equipment that are explosion and fire proof. 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		Record of trainings or Drills		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 to SEPA. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to SEPA and the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
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; 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.				

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
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. 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. 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. 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.				

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
Workers should be facilitated by providing appropriate work specific PPE's such as goggles, mask, ear plugs, gloves, safety shoes and safety helmets. 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. 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.				
Grievance Redressal Mechanism (Labor Living and Working Conditions)				
The worker's Grievance Redressal 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	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)**

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
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. The saplings planted in the project area against the trees affected and for enhancement of environment should be properly maintained throughout their growth. Workers should be provided with clean drinking water and hygienic food and safe & healthy environment to work and live. Workers should be provided with clean drinking water and safe & healthy environment to work and live. 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				Monthly reporting compliance status of ESMP and report to be prepared by the construction contractor to submit PIU CLICK for onward submission to SEPA. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to SEPA and the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
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.				
Gender Based Violence	**Implementation Responsibility**	**Monitoring Parameter(s)**	**Frequency**	**Monitoring & Reporting Responsibility**
To avoid the conflicts related to labour influx 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 influx). 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.	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

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
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 influx. 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.				contractor to submit PIU CLICK for onward submission to SEPA. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to SEPA and the World Bank.
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. The peripheral road carries less traffic, though during construction it may cause hindrances for the community. However, regardless of where the construction takes place, all the work zones should be cordoned off, and traffic shifted away at least with traffic cones, barricades, and temporary signs (temporary "STOP" and "GO"). The proposed area is congested, there should be sufficient signage to warn of dangers and hazards on a construction or worksite. Signs should be clear	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

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
and accompanied by ropes, cones, and other equipment to cordon off dangerous areas. Conduct worksite inspections daily to identify any potential dangers or hazards. Dangers and hazards should be cordoned off immediately. 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				**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 to SEPA. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to SEPA and the World Bank.

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
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
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.				
Socio-Culture and Cultural Heritage				
Contractor will not cause any damage or harm to cultural heritage around the project area. In case of any finding Chance find Procedure will be followed (**refer to Annex E**) Pollution such as noise and dust generation will be avoided while working close to religious and ancient site. Contractors would be trained to address privacy issues behave ethically. The contractors staff must be trained enough to respect local norms.	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

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring & Reporting Responsibility
				contractor to submit PIU CLICK for onward submission to SEPA. Quarterly reporting of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to SEPA and the World Bank.

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 to SEPA. Final report of ESMP compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to SEPA and the World Bank.

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 Road and allied infrastructures, Green Belt, Trees, Signage's, Street Lights; Repair of traffic signs and road markings; Regularly Pothole patching and crack sealing; Regularly Maintenance of traffic signs and road markings; and Removal of debris or obstacles from the road.	District Council Building & Road Department/ Engineering Department/ Horticulture Department	Visual inspection Maintenance Record	Weekly	Focal Person of District Council along with line departments

8.7 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/-**

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 ESMP and will support the District Council in ensuring the EMF, SMF, SEPA 2014, 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

9.4 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 subproject. The PIU will ensure compliance with national as well as the World Bank environmental and social safeguard requirements including preparation of the ESMP and other management plans.

9.5 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. The main function of the ESC will be to support the District Council in ensuring the compliance of the ESMF during the implementation of the sub-project in line with SEPA 2014 and the World Bank safeguards operational policies.

9.6 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.

9.7 Sub-Project Contractor

The Contractor working on the proposed Sub-project will:

- The contractor will hire each specialists for Social, Environment and HSE respectively to look after their respective aspects of subproject 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.

9.8 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.

9.9 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 SEPA and World Bank as part of project implementation performance monitoring arrangements.

9.10 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)

9.11 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 subproject. The training programs will be designed to improve knowledge and ability to deliver environmental and social support across subproject 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
	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

9.12 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 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 be carried out before and during construction 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, SO2, NO, NO2, SPM, PM2.5, PM10, O3				

	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 boats to safeguard labors against the Asphalt emission as a mitigation measure will be taken 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 storm water 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. 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 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. 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. 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 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;				

	All personnel entering the manhole during cleaning or working on sewage manholes should have proper safety equipment. There should be forced ventilation by using air blowers on manholes upstream of the concerned length. All such personnel should use safety harness fastened at the other end and another crew member should monitor crew who has entered the manhole. Ensure ventilating sewer line by opening two or three manholes on both sides of working sewer line for about one hour, and use of gas masks while entering the sewer line. Placing at least two helpers at the top and sending signals at every few minutes to the person in the manhole. Lowering all the tools to the workman in bucket and ensuring that no tools are located near the manhole edge that could fall in to the manhole and injure the workman. Using lighting equipment that are explosion and fire proof. 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. 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. 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. 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.				
9.	Labor Living and Working Conditions				
	The worker's Grievance Redressal Mechanism must be developed and communicated among the workers to lodge complains. Workers should be provided with clean drinking water and safe & healthy environment to work and live. 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.				
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 subproject 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 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 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.				
11	Gender Based Violence				
	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. Construction work should be completed in stipulated period of time.				
11.	Socio-Culture and Cultural Heritage				
	Contractor will not cause any damage or harm to cultural heritage around the project area. In case of any finding Chance find Procedure will be followed (refer to Annex E) Pollution such as noise and dust generation will be avoided while working close to religious and ancient site. Contractor will be trained to address privacy issues behave ethically. The contractor's staff must be trained enough to respect local norms.				

12.	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:

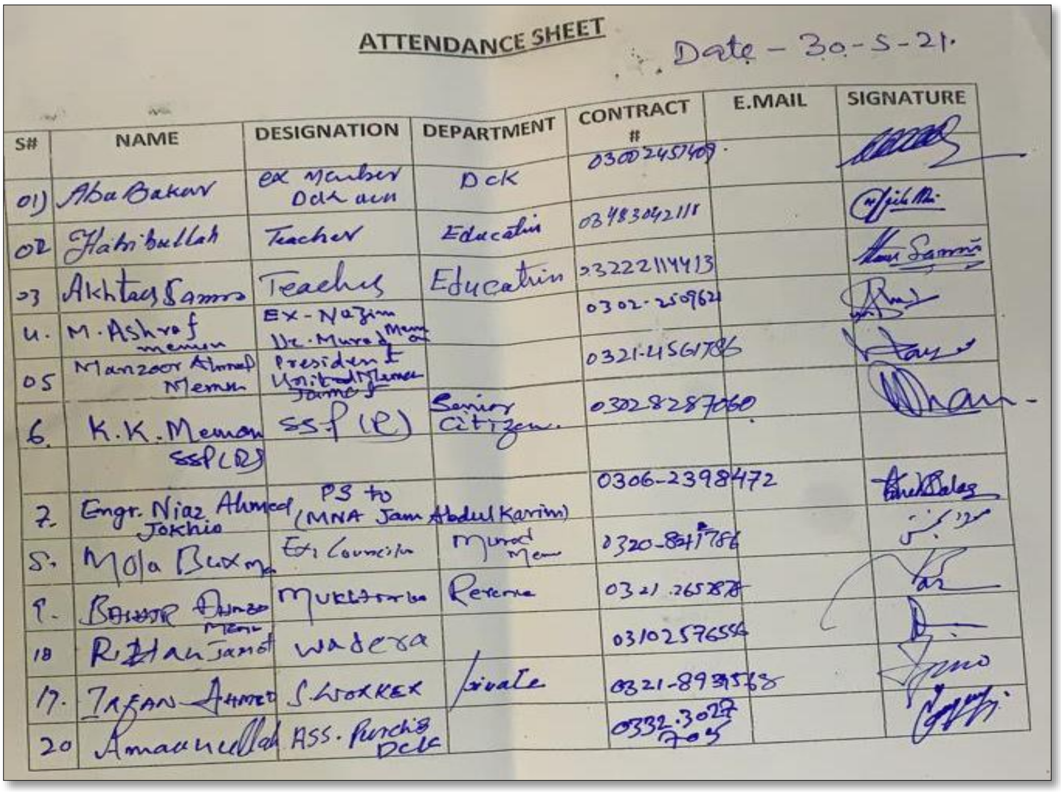
Annex B: Photographs of the Surrounding

	
Existing condition of paka sarak road	Existing condition of paka sarak road
	
Existing condition of paka sarak road	Play Ground of Shaheed Zulfiqar Ali Bhutto Law College in the vicinity of sub-project site
	
Existing condition of road at haji Abdul Karim Mohla	Existing condition of road at haji Abdul Karim Mohla

	
Existing condition of road at Haji Shafi Mohammad Mohla	Existing condition of road at Haji Shafi Mohammad Mohla

Annex C: List of Participants during Stakeholder Consultation

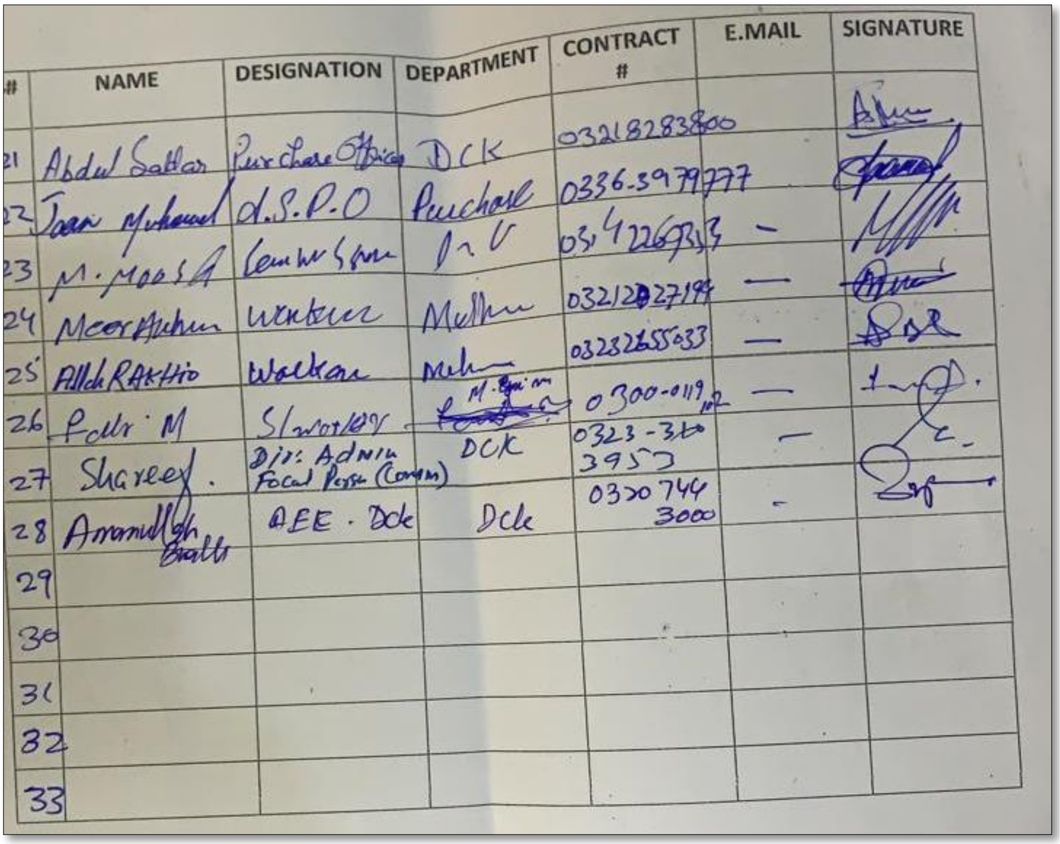
Community Consultation # 01: Community consultation meeting at Sub-project site on dated 30th May 2021.



ATTENDANCE SHEET

Date – 30-5-21.

S#	NAME	DESIGNATION	DEPARTMENT	CONTRACT #	E.MAIL	SIGNATURE
01	Abu Bakar	ex Member DCK	DCK	03002451409		[signature]
02	Habibullah	Teacher	Education	03483042118		[signature]
03	Akhtar Samo	Teacher	Education	03222114413		[signature]
4.	M. Ashraf memon	Ex-Nazim Dr. Murad Memon		0302-2509621		[signature]
05	Manzoor Ahmed Memon	President United Memon Jamat		0321-4561786		[signature]
6.	K.K. Memon SSP(R)	SSP (R)	Senior Citizen	03028287060		[signature]
7.	Engr. Niaz Ahmed Jokhio	PS to (MNA Jam Abdul Karim)		0306-2398472		[signature]
8.	Mola Bux M	Ex Councilor	Murad Memon	0320-8417786		[signature]
9.	Bahadur Ahmed Memon	Mukhtiarkar	Revenue	0321 265878		[signature]
10	Rizwan Jamot	Wadera		03102576554		[signature]
11.	Irfan Ahmed	S.Worker	Private	0321-8931568		[signature]
20	Amanullah	Ass. Purchase DCK		03323027705		[signature]



#	NAME	DESIGNATION	DEPARTMENT	CONTRACT #	E.MAIL	SIGNATURE
21	Abdul Sattar	Purchase Officer	DCK	03218283800		[signature]
22	Jaan Muhammad	A.S.P.O	Purchase	0336-3979777		[signature]
23	M. Moosa	[illegible]	[illegible]	[illegible]	–	[signature]
24	Meer Muhammad	Worker	[illegible]	03212827194	–	[signature]
25	Allah Rakhio	Worker	[illegible]	03232655033	–	[signature]
26	Fedir M	S/worker	M. [illegible]	0300-0119[illegible]	–	[signature]
27	Shareef.	Dir: Admin Focal Person (Comm)	DCK	0323-3603953	–	[signature]
28	Amanullah Bhatti	AEE. DCK	DCK	0330 7443000	–	
29						
30						
31						
32						
33						

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

COMPETATIVE AND LIVABLE CITY OF KARACHI
LOCAL GOVERNMENT DEPARTMENT
GOVERNMENT OF SINDH

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

Public Consultative Meeting Date: 11:00 AM, Date: 12-NOV-2021.

S.No	NAME	DESIGNATION	DEPARTMENT	CONTACT #	EMAIL @	SIGNATURE
1.	TAYYAB SHAFIQUE	Env. Specialist	CLICK	0300-3283791	tayyaben@gmail	[signature]
2)	Ashfaque Hussain	XEN (Sanlap)	Local Govt.	0366-3724147		[signature]
3	Syed Masih ullah	AEE	D.C.K.	03302857812		[signature]
4	Ayaz Baloch	Chief officer	D.C.K.	03002349941	—	[signature]
5.	Manzoor Ahmed Memon	President United Memon Jamat	United Memon Jamat Malhi Kot	03214561786	—	[signature]
6.	M. Ashraf Memon	EX- Nazim UC murad memon	—	0302-2509621	—	[signature]
7-	Mola Bakish Memon	Ex-councillor UC murad memon		0320-8211786	—	[signature]
8	JAWED KHATRI (FP)	click Socio	DCK	0321-8229012	-	[signature]
9	Summaya Soggu	UCCO	Health	03212471120	—	[signature]
	Naseema Ghafoor	LHW	Health	..		NASIM

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

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

Public Consultative Meeting Date: 11:00 AM, Date: 12-NOV-2021.

S.No	NAME	DESIGNATION	DEPARTMENT	CONTACT #	EMAIL @	SIGNATURE
10	Shereen	Razidens	Hal	03232624096	—	[signature]
11	zeenat	"	—	03212934087	—	zeenat
12	Shaheena	"	Hal	0310-2123950	—	Shaheena
13	Roqiyee	"	—	03122703846	—	Roqiyee
14	Salma Naz	Social worker	—	03152598707	—	[signature]
15	Farida	"	—		—	Farida
16	RUKHSANA	"	—	03152282538	—	[signature]
17	Haleema	Resident	—	0316-2670571	—	[signature]
18-	Rehmat	"	—	0311-8409064	—	[signature]
19.	Azra	"	—	—	—	[signature]

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

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

Public Consultative Meeting Date: 11:00 AM, Date: 12-NOV-2021.

S.No	NAME	DESIGNATION	DEPARTMENT	CONTACT #	EMAIL @	SIGNATURE
	Rukhsana Khuzem		LHW	03152870065		[signature]
	Sakina Soomar	/		03138506115		[signature]
	Rehana			03171198140		Rehana
	Shahida			03101181965		Shahida
	Siddique Jamal	—	—	0360 2361071		[signature]
	Rehmatullah Arfani			03112114069		[signature]
	Jalal Memon	LIC-Secretary	UC Murad Memon	03212698706		[signature]
	NASEER AHMED MEMON	Assistant	District Council K	0311-8060348		[signature]
	MANZOOR AHMED	VACC	H.D-P1	03059787326		[signature]
	Zulfiqar	President	—	—		[signature]

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

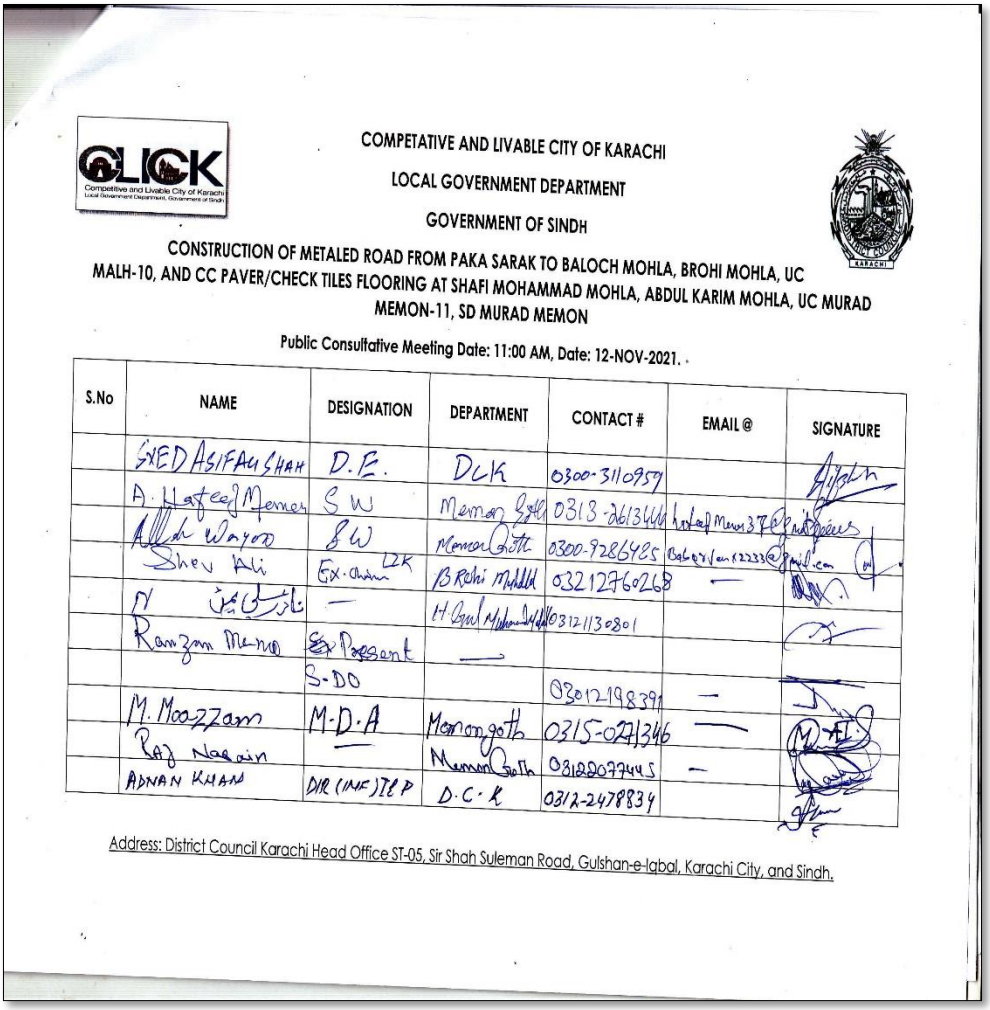
COMPETATIVE AND LIVABLE CITY OF KARACHI
LOCAL GOVERNMENT DEPARTMENT
GOVERNMENT OF SINDH

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

Public Consultative Meeting Date: 11:00 AM, Date: 12-NOV-2021.

S.No	NAME	DESIGNATION	DEPARTMENT	CONTACT #	EMAIL @	SIGNATURE
11	MAQSOOD ALI			0321-2077804		[signature]
12	Zaheer Ahmed			03148168668		[signature]
13	Abu Bakar	ex Member DCK	DCK	03002457409		[signature]
14	WHAEE			03218734451		[signature]
15	Muhammad Jan	Teacher		03161804701		[signature]
16	Haseeb Ghani	Labour		0310-1062192		[signature]
17.	Qadeer Khalid			0316-8911619		[signature]
18	MOLVI MASHOOQ	MOULA		03022990561		[signature]
19.	Salman Ahmed	Computer Operator	DCK	0316-2771880		[signature]
	Javed Ahmed	A.E.E.	DCK	03002243710		[signature]
	Afzal Baloch	9/NSS	DCK	03312283931		[signature]

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

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

Public Consultative Meeting Date: 11:00 AM, Date: 12-NOV-2021.

S.No	NAME	DESIGNATION	DEPARTMENT	CONTACT #	EMAIL @	SIGNATURE
	SYED ASIFALI SHAH	D.E.	DCK	0300-3110957		
	A. Hafeez Memon	S W	Memon Goth	0313-2613446		
	Allah Wayo	S W	Memon Goth	0300-9286425		
	Sher Ali	Ex. Chairman DK	B Rohi Mohlla	03212760268	—	
		—	H Gul	03121130801		
	Ramzan Memon	Ex Peasant	—			
		S-DO		03012198391	—	
	M. Moazzam	M.D.A	Memon goth	0315-0271346	—	
	Raj Nasain		Memon Goth	03122077445	—	
	ADNAN KHAN	DIR (INF) TCP	D.C.K	0312-2478834		

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Consultative meeting with line departments and secondary stakeholders at Administrator District Council office

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 ICHHAN	D.D.(T)	SEPA.	0333-2255736	—	
4.	Mohammad Ruiz	SE. WTM-I	KWSB	0300-3599627	—	
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	—	

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COMPETATIVE AND LIVABLE CITY OF KARACHI

LOCAL GOVERNMENT DEPARTMENT

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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.

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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. For sub-project, the traffic management plan is contain locations where alternate routes or temporary diversions are given.

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 Parameter(s)	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. Appropriate safety precautions will be taken when transporting large equipment on public roadways. Temporary diversions at different locations will be provided depending on the type of sub-project and its civil works. Temporary diversion for lane traffic will be given with the approval of the District Council. 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. All signs, barricades, pavement markings will be as per road specification.	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

Proposed Mitigation Measures	Implementation Responsibility	Monitoring Parameter(s)	Frequency	Monitoring Responsibility
Traffic Management				
Informational signs will be posted where lane and road closures could substantially disrupt traffic circulation at least 7 days prior to the closure. Proper traffic controls will be in place during closures to minimize impacts on traffic circulation and for traffic safety. Appropriate safety precautions will be taken when transporting large equipment on public roadways.				

Traffic Management:

Community health and safety issues during the construction of roads are common to those at most large construction sites, and are discussed in the General EHS Guidelines. These impacts include, among others, dust, noise, and vibration from construction vehicle transit, and communicable disease associated with the influx of temporary construction labor. Significant community health and safety issues associated with road projects may also include:

-Pedestrian safety
-Traffic safety
-Emergency preparedness

Traffic Management Plan

Contractor will provide safe and convenient passage for vehicles, pedestrians and livestock. The traffic control plans will contain details of temporary diversions at different locations of project road where required. Temporary diversion for road traffic will be constructed with the approval of the District Council. The temporary traffic detours in settlement areas will be kept free of dust by frequent application of water. 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. All signs, barricades, pavement markings will be as per road specification.

Informational signs will be posted where lane and road closures could substantially disrupt traffic circulation at least 7 days prior to the closure. Proper traffic controls will be in place during closures to minimize impacts on traffic circulation and for traffic safety. Appropriate safety precautions will be taken when transporting large equipment on public roadways.

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

CLICK, Local Government Department, GoS

Address: Sir Shah Suleman Road, Block 14
Gulshan-e-Iqbal, Karachi, Karachi City, Sindh
Landline# +92- 21- 99232531-99232593

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 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 Thermogun/s 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 coworker 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.
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 at 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 subproject 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 road 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 Parameter(s)	Frequency	Monitoring Responsibility
Solid Waste Management				
The debris (rejected material) produced during construction would be disposed-off in government approved/allocated disposal sites. Leftover material will not be dumped into storm water 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

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	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

spills or leaks will be 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 Redressal 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 subproject, 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

CLICK, Local Government Department, GoS
Address: 1st Floor, DMC South Office,
KRC Captain Road, Haqqani Chowk, Aaram Bagh
Karachi,
Landline# +92- 21- 99218874

KMC's Helpline/Compliant 1339.

District Council Sir Shah Suleman road, Block -14 Gulshan –e- Iqbal, Karachi.
Phone # 021-9932531/99232593

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
	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 Waters (mg/l)		
S.No	**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 Waters (mg/l)		
S.#	**Properties / Parameters**	**Standard Values for Pakistan**
Physical		
1	Color	< 15 TCU
2	Taste	Non objectionable/ Acceptable
3	Odor	Non objectionable/ Acceptable
4	Turbidity	< 5 NTU
5	Total Hardness as $CaCO_3$	< 500 mg/l
6	TDS	<1000
7	pH	6.5-8.5
Chemical-Essential Inorganics (mg/liter)		
1	Aluminum (Al) mg/l	≤ 0.2
2	Antimony (Sb)	≤ 0.005
3	Arsenic (As)	≤ 0.05
4	Barium (Ba)	0.7
5	Boron (B)	0.3
6	Cadmium (Cd)	0.01
7	Chloride (Cl-)	< 250
8	Chromium (Cr)	≤ 0.05
9	Copper (Cu)	2
Chemical -Toxic Inorganics (mg/liter)		
1	Cyanide (CN)-	≤ 0.05
2	Fluoride (F)	≤ 1.5
3	Lead (Pb)	≤ 0.05
4	Manganese (Mn)	≤ 0.5
5	Mercury (Hg)	≤ 0.001
6	Nickel (Ni)	≤ 0.02
7	Nitrate (NO_3)-	≤ 50
8	Nitrite (NO_2)-	≤ 3
9	Selenium (SE)	≤ 0.01
10	Residual Chlorine	0.2-0.5 At consumer end 0.5-1.5 at source
11	Zinc (Zn)	5.0
Chemical-Organic (mg/L)		
1	Phenolic	<0.0002
Radioactive		
1	Alpha Emitters bq/L	0.1
2	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.

Zaidi 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

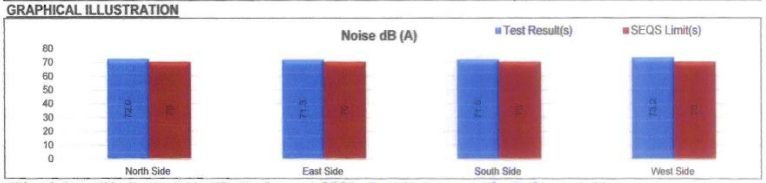
Ref. No. AMT/EA/OCT-21/ENV-0678/JR-0916 **Report No.** AMT/EA/OCT-21/AQ/AL-04407

Client Name	E.A Consulting Private Limited		
Sampling Location	Construction of Metaled Road From Pakka Sarak to Baloch Mohla,Barohi Mohla,UC Malh-10(Near Kashmir Bismillah Hotel)		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sampling Date	2-Nov-21	**Reporting Date**	3-Nov-21
LOCATION DETAILS			
Sampling Area	Sampling Point 1 at Sub-Project Location	**Sampling type**	Grab Sample
Coordinates	24°55'32.1"N 67°14'50.3"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	72.0	70
2				East Side	71.3	70
3				South Side	71.5	70
4				West Side	73.2	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.

Postal Address: Plot No, B-56 / Sector 6-H, Mehran Town, Korangi Industrial Area, Karachi-74900, Pakistan.
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)

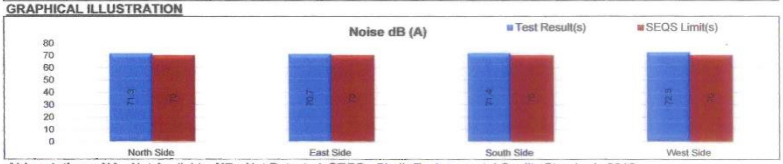
NOISE EXPOSURE TEST REPORT

Ref. No.	**AMT/EA/OCT-21/ENV-0678/JR-0916**	**Report No.**	**AMT/EA/OCT-21/AQ/AL-04409**
Client Name	E.A Consulting Private Limited		
Client Address	Abdul Karim Mohla		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sampling Date	3-Nov-21	**Reporting Date**	4-Nov-21
LOCATION DETAILS			
Sampling Area	Sampling Point 2 at sub project location	**Sampling Type**	Grab Sample
Coordinates	24°55'18.0"N 67°15'06.2"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	71.3	70
2				East Side	70.7	70
3				South Side	71.4	70
4				West Side	72.3	70

GRAPHICAL ILLUSTRATION



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Note:

Limit mention on bases of commercial area as per SEQS
Day Time Hours: 6:00 a.m to 10:00 p.m
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Sample Analysed by
(Field Analyst)

AIMS TEC (PRIVATE) LIMITED

Reviewed by
Dr. Ishrat ullah Siddiqui

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NOISE EXPOSURE TEST REPORT

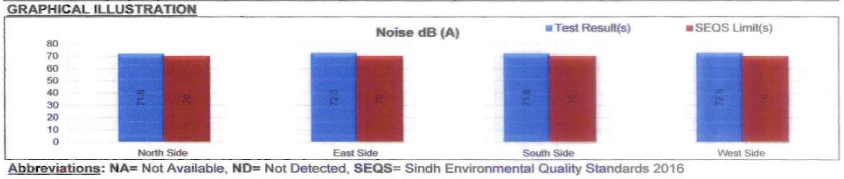
Ref. No. AMT/EA/OCT-21/ENV-0678/JR-0916 **Report No.** AMT/EA/OCT-21/AQ/AL-04411

Client Name	E.A Consulting Private Limited		
Client Address	Shafi Mohammad Mohla		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sampling Date	4-Nov-21	**Reporting Date**	5-Nov-21
LOCATION DETAILS			
Sampling Area	Sampling Point 3 at sub Project location	**Sampling type**	Grab Sample
Coordinates	24°55'18.9"N 67°15'11.6"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	71.6	70
2				East Side	72.3	70
3				South Side	71.9	70
4				West Side	72.5	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)

AIMS TEC (PRIVATE) LIMITED

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-04406**

Client Name	E.A Consulting Private Limited		
Sampling Location	Construction of Metaled Road From Pakka Sarak to Baloch Mohla,Barohi Mohla,UC Malh-10(Near Kashmir Bismillah Hotel)		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sampling Date	2-Nov-21	**Sampling End Date**	3-Nov-21

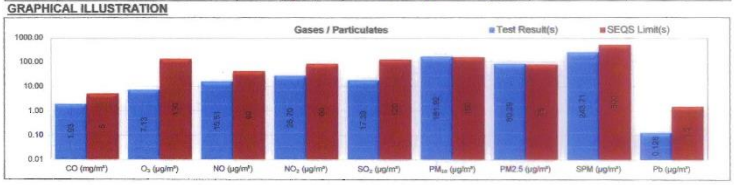
LOCATION DETAILS

Sampling Area	Sampling Point 1 at Sub-Project Location	**Sampling Type**	24 hours
Coordinates	24°55'32.1"N 67°14'50.3"E	**Sampling Start Time**	9:00 AM

TEST RESULTS

S.No	Parameter(s)	Unit(s)	Methodology	Test Result(s)	SEQS Limit(s)
1	Carbon Monoxide	CO (mg/m^3)	Non Dispersive Infrared Method	1.93	5
2	Ozone	O_3 ($\mu g/m^3$)	ASTM D-5156	7.13	130
3	Oxides of Nitrogen	NO ($\mu g/m^3$)	ASTM D-1607	15.51	40
4	Nitrogen Dioxide	NO_2 ($\mu g/m^3$)	ASTM D-3608	26.70	80
5	Sulphur Dioxide	SO_2 ($\mu g/m^3$)	ASTM D-2914	17.33	120
6	Particulate Matter (10-Microns)	PM_{10} ($\mu g/m^3$)	PM Analyzer (Laser Diode)	161.92	150
7	Particulate Matter (2.5-Microns)	PM2.5 ($\mu g/m^3$)	PM Analyzer (Laser Diode)	80.29	75
8	Particulate Matter (suspended)	SPM ($\mu g/m^3$)	PM Analyzer (Laser Diode)	243.71	500
9	Lead	Pb ($\mu g/m^3$)	AAS Method (EPM Filter paper)	0.128	1.5

GRAPHICAL ILLUSTRATION



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

Note:

Monitoring Start Time 9:00 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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AIR QUALITY MONITORING DETAIL REPORT

Ref. No. AMT/EA/OCT-21/ENV-0678/JR-0916 **Report No.** **AMT/EA/OCT-21/AQ/AL-04406**

Client Name	E.A Consulting Private Limited		
Sampling Location	Construction of Metaled Road From Pakka Sarak to Baloch Mohla,Barohi Mohla,UC Malh-10(Near Kashmir Bismillah Hotel)		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sampling Start Date	2-Nov-21	**Sampling End Date**	3-Nov-21
LOCATION DETAILS			
Sampling Area	Sampling Point 1 at Sub-Project Location	**Sampling Type**	24 hours
Coordinates	24°55'32.1"N 67°14'50.3"E	**Sampling Start Time**	9:00 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	2-Nov-21	10:00 AM	1.4	3.6	13.1	22.1	13.1	137	68	230	0.08
2	2-Nov-21	11:00 AM	1.5	4.5	12.1	22.9	15.2	143	71	233	0.11
3	2-Nov-21	12:00 PM	1.6	5.1	13.9	23.1	17.6	149	78	245	0.13
4	2-Nov-21	1:00 PM	2.1	8.1	15.3	25.4	19.5	155	83	260	0.16
5	2-Nov-21	2:00 PM	2.7	9.3	17.8	26.7	17.4	170	86	257	0.19
6	2-Nov-21	3:00 PM	2.8	7.6	19.2	27.4	18.1	180	90	270	0.23
7	2-Nov-21	4:00 PM	1.7	6.9	17.3	29.3	19.7	175	92	280	0.2
8	2-Nov-21	5:00 PM	3.1	9.1	20.1	31.2	20.1	190	95	290	0.21
9	2-Nov-21	6:00 PM	3.6	9.4	23.6	33.2	21.8	200	98	205	0.23
10	2-Nov-21	7:00 PM	2.3	9.3	21.8	34.5	22.6	203	105	320	0.18
11	2-Nov-21	8:00 PM	2	9.1	17.3	31.8	19.3	190	90	295	0.21
12	2-Nov-21	9:00 PM	2.2	10.5	18.2	28.3	18.3	186	78	240	0.15
13	2-Nov-21	10:00 PM	1.9	0.8	15.1	26.3	16.1	170	75	225	0.13
14	2-Nov-21	11:00 PM	1.7	8.1	13.7	22.9	15.7	155	80	230	0.09
15	3-Nov-21	12:00 AM	1.6	8.3	12.3	24.5	16.3	150	71	235	0.05
16	3-Nov-21	1:00 AM	1.1	6.7	11.8	21.8	15.1	153	70	245	0.07
17	3-Nov-21	2:00 AM	0.9	5.1	10.2	22.4	17.2	147	75	210	0.09
18	3-Nov-21	3:00 AM	1.3	3.1	12.3	23.5	16.9	142	65	215	0.04
19	3-Nov-21	4:00 AM	1.2	6.1	11.6	21.4	13.2	135	70	225	0.03
20	3-Nov-21	5:00 AM	0.8	6.9	13.4	26.1	14.7	130	74	210	0.09
21	3-Nov-21	6:00 AM	1.2	6.3	12.4	27.5	13.8	137	77	240	0.07
22	3-Nov-21	7:00 AM	1.4	8.1	14.1	28.4	14.9	148	71	229	0.06
23	3-Nov-21	8:00 AM	2.5	9.3	16.9	28.6	17.4	160	80	220	0.13
24	3-Nov-21	9:00 AM	3.7	9.8	18.7	31.6	21.9	181	85	240	0.15
MIN			**0.8**	**0.8**	**10.2**	**21.4**	**13.1**	**130**	**65**	**205**	**0.03**
MAX			**3.7**	**10.5**	**23.6**	**34.5**	**22.6**	**203**	**105**	**320**	**0.23**
Average			**1.93**	**7.13**	**15.51**	**26.70**	**17.33**	**161.92**	**80.29**	**243.71**	**0.128**
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 9:00 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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AIR QUALITY MONITORING TEST REPORT

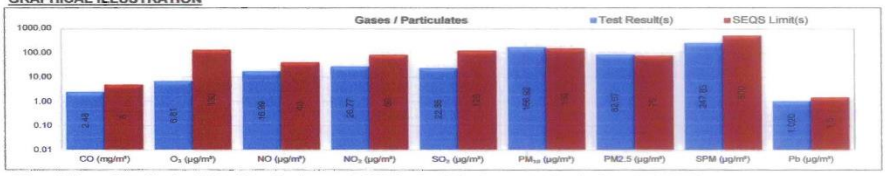
Ref. No. AMT/EA/OCT-21/ENV-0678/JR-0916 **Report No. AMT/EA/OCT-21/AQ/AL-04408**

Client Name	E.A Consulting Private Limited		
Sampling Location	Abdul Karim Mohla		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sampling Date	3-Nov-21	**Sampling End Date**	4-Nov-21
LOCATION DETAILS			
Sampling Area	Sampling Point 2 at Sub-Project Location	**Sampling Type**	24 hours
Coordinates	24°55'18.0"N 67°15'06.2"E	**Sampling Start Time**	9:15 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	2.48	5
2	Ozone	O_3 (µg/m³)	ASTM D-5156	6.81	130
3	Oxides of Nitrogen	NO (µg/m³)	ASTM D-1607	16.99	40
4	Nitrogen Dioxide	NO_2 (µg/m³)	ASTM D-3608	26.77	80
5	Sulphur Dioxide	SO_2 (µg/m³)	ASTM D-2914	22.88	120
6	Particulate Matter (10-Microns)	PM_{10} (µg/m³)	PM Analyzer (Laser Diode)	166.92	150
7	Particulate Matter (2.5-Microns)	PM2.5 (µg/m³)	PM Analyzer (Laser Diode)	82.67	75
8	Particulate Matter (suspended)	SPM (µg/m³)	PM Analyzer (Laser Diode)	247.83	500
9	Lead	Pb (µg/m³)	AAS Method (EPM Filter paper)	1.020	1.5

GRAPHICAL ILLUSTRATION



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

Note:

Monitoring Start Time 9:15 AM
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Sample Analysed by
(Field Analyst)

AIMS TEC (PRIVATE) LIMITED

Reviewed by
Dr. Ishrat ullah Siddiqui

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AIR QUALITY MONITORING DETAIL REPORT

Ref. No. AMT/EA/OCT-21/ENV-0678/JR-0916 **Report No.** **AMT/EA/OCT-21/AQ/AL-04408**

Client Name	E.A Consulting Private Limited		
Sampling Location	Abdul Karim Mohla		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sampling Start Date	3-Nov-21	**Sampling End Date**	4-Nov-21
LOCATION DETAILS			
Sampling Area	Sampling Point 2 at Sub-Project Location	**Sampling Type**	24 hours
Coordinates	24°55'18.0"N 67°15'06.2"E	**Sampling Start Time**	9:15 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	3-Nov-21	10:15 AM	1.7	3.9	11.1	22.1	17.7	139	69	198	0.9
2	3-Nov-21	11:15 AM	1.6	4.1	12.1	25.1	19.1	142	73	210	1.1
3	3-Nov-21	12:15 PM	1.9	4.3	13.2	27.3	21.6	147	75	235	1.03
4	3-Nov-21	1:15 PM	2.4	5.7	14.5	28.1	22.3	160	89	230	1.06
5	3-Nov-21	2:15 PM	2	6.1	17.1	33.1	23.7	170	95	270	1.08
6	3-Nov-21	3:15 PM	3.1	6.7	19.8	32.6	25.1	190	100	265	1.01
7	3-Nov-21	4:15 PM	2.8	6.3	20.1	34.6	30.1	210	92	255	1.12
8	3-Nov-21	5:15 PM	3.6	8.1	13.5	29.1	27.1	190	80	280	1.17
9	3-Nov-21	6:15 PM	4.1	11.3	19.3	27.4	29.1	175	85	283	1.11
10	3-Nov-21	7:15 PM	3.9	10.2	21.2	26.1	26.4	177	90	298	0.9
11	3-Nov-21	8:15 PM	3.3	12.1	22.1	24.5	27.9	162	87	280	1.14
12	3-Nov-21	9:15 PM	3.1	9.5	23.1	28.1	25.8	170	85	270	1.13
13	3-Nov-21	10:15 PM	2.9	8.5	19.1	26.9	23.5	165	90	260	1.05
14	3-Nov-21	11:15 PM	2.7	8.3	19.8	27.6	22.7	175	81	245	1.7
15	4-Nov-21	12:15 AM	2.1	7.8	18.3	23.8	21.5	150	77	210	1.03
16	4-Nov-21	1:15 AM	1.9	7.3	17.1	22.1	19.3	145	83	230	1.01
17	4-Nov-21	2:15 AM	1.6	6.1	16.1	20.8	17.5	147	71	240	1.07
18	4-Nov-21	3:15 AM	1.1	5.7	14.1	21.4	16.8	140	70	215	0.9
19	4-Nov-21	4:15 AM	1.5	4.1	13.1	20.1	16.3	145	72	219	0.6
20	4-Nov-21	5:15 AM	1.7	3.6	12.7	24.7	19.3	165	74	225	0.03
21	4-Nov-21	6:15 AM	1.9	3.1	11.1	27.8	21.7	175	81	270	1.03
22	4-Nov-21	7:15 AM	2.3	4.8	15.3	25.6	22.5	190	85	255	1.05
23	4-Nov-21	8:15 AM	2.9	6.4	19.2	29.5	23.7	192	87	260	1.2
24	4-Nov-21	9:15 AM	3.4	9.4	24.7	34.1	28.5	185	93	245	1.07
MIN			**1.1**	**3.1**	**11.1**	**20.1**	**16.3**	**139**	**69**	**198**	**0.03**
MAX			**4.1**	**12.1**	**24.7**	**34.6**	**30.1**	**210**	**100**	**298**	**1.7**
Average			**2.48**	**6.81**	**16.99**	**26.77**	**22.88**	**166.92**	**82.67**	**247.83**	**1.020**
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 9:15 AM
Report was recorded after every 1 hour interval at the sub-project site
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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-04410**

Client Name	E.A Consulting Private Limited		
Client Address	Shafi Mohammad Mohla		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sampling Date	4-Nov-21	**Sampling End Date**	5-Nov-21

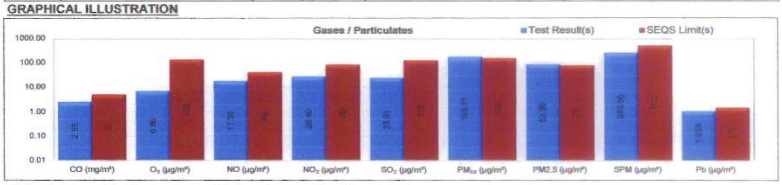
LOCATION DETAILS

Sampling Area	Sampling Point 3 at sub project location	**Sampling Type**	24 hours
Coordinates	24°55'19.1"N 67°15'11.6"E	**Sampling Start Time**	9:45 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	2.55	5
2	Ozone	O_3 (µg/m³)	ASTM D-5156	6.86	130
3	Oxides of Nitrogen	NO (µg/m³)	ASTM D-1607	17.38	40
4	Nitrogen Dioxide	NO_2 (µg/m³)	ASTM D-3608	26.40	80
5	Sulphur Dioxide	SO_2 (µg/m³)	ASTM D-2914	23.01	120
6	Particulate Matter (10-Microns)	PM_{10} (µg/m³)	PM Analyzer (Laser Diode)	168.71	150
7	Particulate Matter (2.5-Microns)	PM2.5 (µg/m³)	PM Analyzer (Laser Diode)	82.96	75
8	Particulate Matter (suspended)	SPM (µg/m³)	PM Analyzer (Laser Diode)	248.96	500
9	Lead	Pb (µg/m³)	AAS Method (EPM Filter paper)	1.059	1.5

GRAPHICAL ILLUSTRATION



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

Note:

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Sample Analysed by
(Field Analyst)

AIMS TEC (PRIVATE) LIMITED

Reviewed by
Dr. Ishrat ullah Siddiqui

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AIR QUALITY MONITORING TEST REPORT

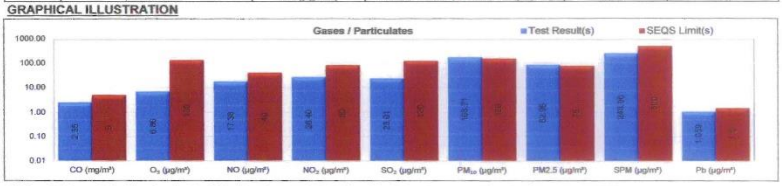
Ref. No. AMT/EA/OCT-21/ENV-0678/JR-0916 **Report No.** AMT/EA/OCT-21/AQ/AL-04410

Client Name	E.A Consulting Private Limited		
Client Address	Shafi Mohammad Mohla		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sampling Date	4-Nov-21	**Sampling End Date**	5-Nov-21
LOCATION DETAILS			
Sampling Area	Sampling Point 3 at sub project location	**Sampling Type**	24 hours
Coordinates	24°55'19.1"N 67°15'11.6"E	**Sampling Start Time**	9:45 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	2.55	5
2	Ozone	O_3 (µg/m³)	ASTM D-5156	6.86	130
3	Oxides of Nitrogen	NO (µg/m³)	ASTM D-1607	17.38	40
4	Nitrogen Dioxide	NO_2 (µg/m³)	ASTM D-3608	26.40	80
5	Sulphur Dioxide	SO_2 (µg/m³)	ASTM D-2914	23.01	120
6	Particulate Matter (10-Microns)	PM_{10} (µg/m³)	PM Analyzer (Laser Diode)	168.71	150
7	Particulate Matter (2.5-Microns)	PM2.5 (µg/m³)	PM Analyzer (Laser Diode)	82.96	75
8	Particulate Matter (suspended)	SPM (µg/m³)	PM Analyzer (Laser Diode)	248.96	500
9	Lead	Pb (µg/m³)	AAS Method (EPM Filter paper)	1.059	1.5

GRAPHICAL ILLUSTRATION



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

Note:

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Sample Analysed by
(Field Analyst)

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-0873-A**

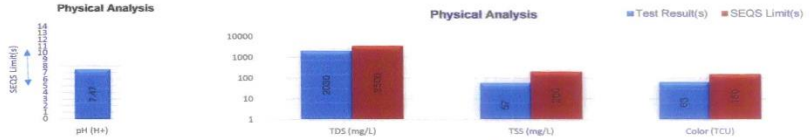
Client Name	E.A. Consulting Private Limited		
Sampling Location	Construction of Metaled Road From Pakka Sarak to Baloch Mohla,Barohi Mohla,UC Malh-10(Near Kashmir Bismillah Hotel)		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sample Collected / Given by	Aimstec Pvt Ltd	**Sampling Nature**	Waste Water
Sampling Point	Nullah (sewerage)	**Sampling Time**	11:00 AM
Sampling Date	2-Nov-21	**Sample Receiving Date**	2-Nov-21
Analysis Completed On	7-Nov-21	**Reporting Date**	8-Nov-21
Sampling Area	Sewerage Diposal Unit Memon Goth	**Coordinates**	24°54'57.7"N 67°14'59.1"E

TEST RESULTS

Physical Analysis

S.No	Parameter	Method	Unit	Test Result(s)	SEQS Limit(s)
01	Temperature	Digital Thermometer	Temp (C)	25	40 ≤ 3 ℃
02	pH - Hydrogen ions	ASTM D-1293	pH (H+)	7.47	6 To 9
03	Total Dissolved Solids	APHA 2540-C	TDS (mg/L)	2030	3500
04	Total Suspended Solids	APHA 2540-D	TSS (mg/L)	57	200
05	Color	HACH 8025	Color (TCU)	63	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.

Note: This report should be reproduced as a whole and not in parts
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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-0873-B**

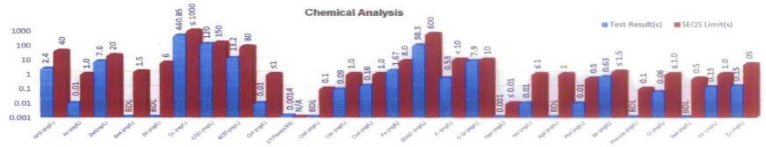
Client Name	E.A. Consulting Private Limited		
Sampling Location	Construction of Metaled Road From Pakka Sarak to Baloch Mohla,Barohi Mohla,UC Malh-10(Near Kashmir Bismillah Hotel)		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sample Collected / Given by	Aimstec Pvt Ltd	**Sampling Nature**	Wastewater
Sampling Point	Nullah (sewerage)	**Sampling Time**	11:00 AM
Sampling Date	2-Nov-21	**Sample Receiving Date**	2-Nov-21
Analysis Completed On	7-Nov-21	**Reporting Date**	8-Nov-21
Sampling Area	Sewerage Diposal Unit Memon Goth	**Coordinates**	24°54'57.7"N 67°14'59.1"E

TEST RESULTS

Chemical Analysis

S.No	Parameter	Method	Unit	Test Result(s)	SEQS Limit(s)
01	Amonnia	HACH 13001	NH_3 (mg/L)	2.4	40
02	Arsenic	APHA 3500-As	As (mg/L)	0.01	1.0
03	Anionic Detergent	HACH 8028	Det(mg/L)	7.6	20
04	Barium	HACH 8014	Ba^{+} (mg/L)	BDL	1.5
05	Boron	PS 1932 : 2002	B^{+} (mg/L)	BDL	6
06	Chloride	ASTM D-512	Cl^{-} (mg/L)	460.85	≤ 1000
07	Chemical Oxygen Demand	ASTM D-1252	COD (mg/L)	120	150
08	Biochemical Oxygen Demand	APHA 5210	BOD (mg/L)	13.2	80
09	Chromium	HACH 8023	Cr^{+} (mg/L)	0.01	≤ 1
10	Discharge Flow Rate	Flow Meter	Eff.Flow(m3/S)	0.0014	N/A
11	Cadmium	HACH 8017	Cd^{+} (mg/L)	BDL	0.1
12	Cyanide	HACH 8027	CN^{-} (mg/L)	0.09	1.0
13	Copper	HACH 8506	Cu^{+} (mg/L)	0.16	1.0
14	Iron	HACH 8008	Fe (mg/L)	1.67	8.0
15	Sulphate	ASTM D-516	SO_x^{2-} (mg/L)	98.3	600
16	Fluoride	HACH 8029	F^{-} (mg/L)	0.53	< 10
17	Oil and Grease	ASTM D-4281	O.Gr (mg/L)	7.9	10
18	Mercury	HACH 10065	Hg^{+} (mg/L)	0.001	≤ 0.01
19	Nickel	HACH 8150	Ni^{+} (mg/L)	0.01	≤ 1
20	Silver	Lab Method	Ag^{+} (mg/L)	BDL	1
21	Lead	HACH 8033	Pb^{+} (mg/L)	0.01	0.5
22	Manganese	HACH 8034	Mn (mg/L)	0.63	≤ 1.5
23	Phenolic compounds	ASTM D-1783	Phenols (mg/L)	BDL	0.1
24	Chlorine	HACH 8021	Cl (mg/L)	0.06	1.0
25	Selenium	HACH 8009	Se^{+} (mg/L)	BDL	0.5
26	Sulpide	HACH 8009	S^{2-} (mg/L)	0.13	1.0
27	Zinc	HACH 8010	Zn (mg/L)	0.15	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 Waste water sample results are within guideline value set by SEQS limit.

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Sample Analysed by
(Lab Analyst)

Reviewed by
Dr. Ishrat ullah Siddiqui

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SEPA APPROVED CERT NO. 13

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-0872-A**

Client Name	E.A. Consulting Private Limited		
Sampling Location	Shafi Mohammad Mohla		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sample Collected / Given by	Aimstec Pvt Ltd	**Sampling Nature**	Ground Water
Sampling Point	Ground Water	**Sampling Time**	11:00 AM
Sampling Date	2-Nov-21	**Sample Receiving Date**	2-Nov-21
Analysis Completed on	4-Nov-21	**Reporting Date**	5-Nov-21
Sampling Area	Jamia Masjid Islamia	**Coordinates**	24°55'12.7"N 67°15'13.4"E

TEST RESULTS

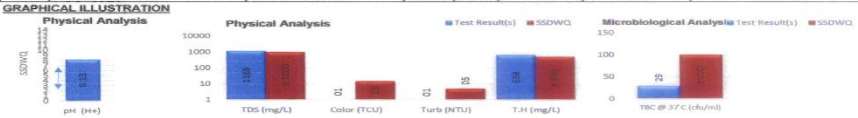
Physical Analysis

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)	1169	≤ 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)	01	05
07	Total hardness as CaCO3	ASTM D-1126	T.H (mg/L)	638	≤ 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)	29	≤ 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



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Remark: The ground water sample results are not 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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WATER ANALYSIS TEST REPORT

Ref. No. AMT/EA/NOV-21/ENV-0678/JR-0916 | **Report No. AMT/EA/NOV-21/DW/WL-0872-B**

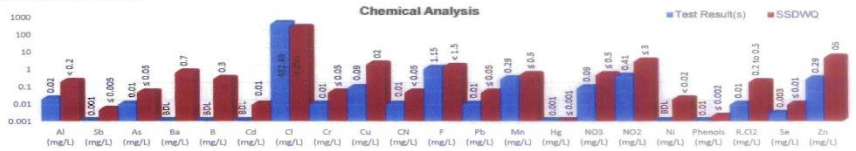
Client Name	E.A. Consulting Private Limited		
Sampling Location	Shafi Mohammad Mohla		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sample Collected / Given by	Aimstec Pvt Ltd	**Sampling Nature**	Ground Water
Sampling Point	Ground Water	**Sampling Time**	11:00 AM
Sampling Date	2-Nov-21	**Sample Receiving Date**	2-Nov-21
Analysis Completed on	4-Nov-21	**Reporting Date**	5-Nov-21
Sampling Area	Jamia Masjid Islamia	**Coordinates**	24°55'12.7"N 67°15'13.4"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)	0.001	≤ 0.005
03	Arsenic	APHA 3500-As	As (mg/L)	0.01	≤ 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)	432.49	≤ 250
09	Chromium	HACH 8022	Cr (mg/L)	0.01	≤ 0.05
11	Copper	HACH 8506	Cu (mg/L)	0.09	02
12	Cyanide	HACH 8027	CN (mg/L)	0.01	< 0.05
13	Fluoride	HACH 8029	F (mg/L)	1.15	< 1.5
14	Lead	HACH 8033	Pb (mg/L)	0.01	≤ 0.05
15	Manganese	PS 1932 : 2002	Mn (mg/L)	0.29	≤ 0.5
16	Mercury	PS 1932 : 2002	Hg (mg/L)	0.001	≤ 0.001
17	Nitrate	HACH 8171	NO_3 (mg/L)	0.09	≤ 0.5
18	Nitrite	HACH 8507	NO_2 (mg/L)	0.41	≤ 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)	0.003	≤ 0.01
21	Zinc	HACH 8009	Zn (mg/L)	0.29	05

GRAPHICAL ILLUSTRATION



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Remark: The ground water sample results are not 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-0871-A**

Client Name	E.A. Consulting Private Limited		
Sampling Location	Abdul Karim Mohla		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sample Collected / Given by	Aimstec Pvt Ltd	**Sampling Nature**	Ground Water
Sampling Point	Ground Water	**Sampling Time**	10:30 AM
Sampling Date	2-Nov-21	**Sample Receiving Date**	2-Nov-21
Analysis Completed on	4-Nov-21	**Reporting Date**	5-Nov-21
Sampling Area	Jama Masjid Noor E Mustufa	**Coordinates**	24°55'17.4"N 67°15'02.9"E

TEST RESULTS

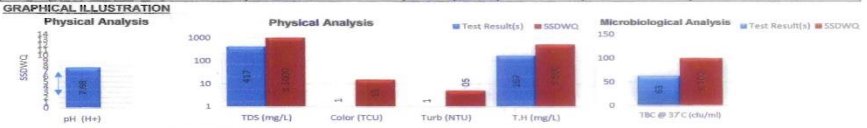
Physical Analysis

S.No	Parameter	Method	Unit	Test Result(s)	SSDWQ
01	pH - Hydrogen ions (onsite)	ASTM D-1293	pH (H+)	7.68	6.5 to 8.5
02	Total Dissolved Solids	APHA 2540-C	TDS (mg/L)	417	≤ 1000
03	Color	HACH 8025	Color (TCU)	1	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)	1	05
07	Total hardness as CaCO3	ASTM D-1126	T.H (mg/L)	167	≤ 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)	63	≤ 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



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WATER ANALYSIS TEST REPORT

Ref. No. AMT/EA/NOV-21/ENV-0678/JR-0916 | **Report No. AMT/EA/NOV-21/DW/WL-0871-B**

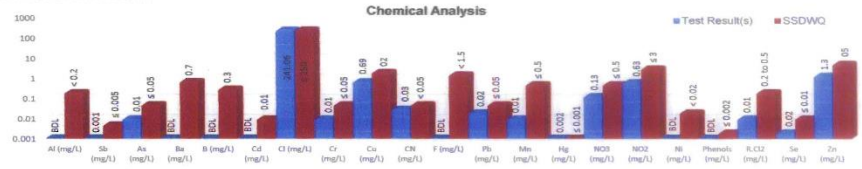
Client Name	E.A. Consulting Private Limited		
Sampling Location	Abdul Karim Mohla		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sample Collected / Given by	Aimstec Pvt Ltd	**Sampling Nature**	Ground Water
Sampling Point	Ground Water	**Sampling Time**	10:30 AM
Sampling Date	2-Nov-21	**Sample Receiving Date**	2-Nov-21
Analysis Completed on	4-Nov-21	**Reporting Date**	5-Nov-21
Sampling Area	Jama Masjid Noor e Mustafa	**Coordinates**	24°55'17.4"N 67°15'02.9"E

TEST RESULTS

Chemical Analysis

S.No	Parameter	Method	Unit	Test Result(s)	SSDWQ
01	Aluminium	PS 1932 : 2002	Al (mg/L)	BDL	< 0.2
02	Antimony	PS 1932 : 2002	Sb (mg/L)	0.001	≤ 0.005
03	Arsenic	APHA 3500-As	As (mg/L)	0.01	≤ 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)	241.06	≤ 250
09	Chromium	HACH 8022	Cr (mg/L)	0.01	≤ 0.05
11	Copper	HACH 8506	Cu (mg/L)	0.69	02
12	Cyanide	HACH 8027	CN (mg/L)	0.03	< 0.05
13	Fluoride	HACH 8029	F (mg/L)	BDL	< 1.5
14	Lead	HACH 8033	Pb (mg/L)	0.02	≤ 0.05
15	Manganese	PS 1932 : 2002	Mn (mg/L)	0.01	≤ 0.5
16	Mercury	PS 1932 : 2002	Hg (mg/L)	0.0002	≤ 0.001
17	Nitrate	HACH 8171	NO_3 (mg/L)	0.13	≤ 0.5
18	Nitrite	HACH 8507	NO_2 (mg/L)	0.63	≤ 3
19	Nickel	HACH 8037	Ni (mg/L)	BDL	< 0.02
18	Phenolic compounds	ASTM D-1781	Phenols (mg/L)	BDL	≤ 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)	1.3	05

GRAPHICAL ILLUSTRATION



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WATER ANALYSIS TEST REPORT

Ref. No. AMT/EA/NOV-21/ENV-0678/JR-0916 | **Report No. AMT/EA/NOV-21/DW/WL-0870-A**

Client Name	E.A. Consulting Private Limited		
Sampling Location	Construction of Metaled Road From Pakka Sarak to Baloch Mohla,Barohi Mohla,UC Malh-10(Near Kashmir Bismillah Hotel)		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sample Collected / Given by	Aimstec Pvt Ltd	**Sampling Nature**	Ground Water
Sampling Point	Ground Water	**Sampling Time**	10:00 AM
Sampling Date	2-Nov-21	**Sample Receiving Date**	2-Nov-21
Analysis Completed on	4-Nov-21	**Reporting Date**	5-Nov-21
Sampling Area	Masjid Ali Al Murtaza	**Coordinates**	24°55'30.4"N 67°14'54.8"E

TEST RESULTS

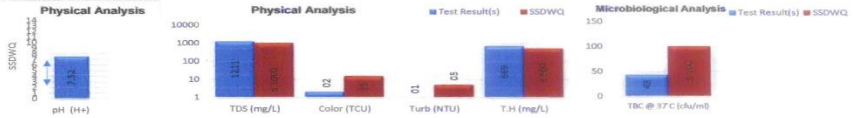
Physical Analysis

S.No	Parameter	Method	Unit	Test Result(s)	SSDWQ
01	pH - Hydrogen ions (onsite)	ASTM D-1293	pH (H+)	7.52	6.5 to 8.5
02	Total Dissolved Solids	APHA 2540-C	TDS (mg/L)	1211	≤ 1000
03	Color	HACH 8025	Color (TCU)	02	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)	01	05
07	Total hardness as CaCO3	ASTM D-1126	T.H (mg/L)	669	≤ 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)	43	≤ 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 ground water sample results are not within guideline value set by SSDWQ limit.

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Sample Analysed by
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Reviewed by
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WATER ANALYSIS TEST REPORT

Ref. No. AMT/EA/NOV-21/ENV-0678/JR-0916 | **Report No. AMT/EA/NOV-21/DW/WL-0870-B**

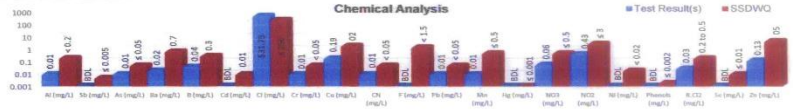
Client Name	E.A. Consulting Private Limited		
Sampling Location	Construction of Metaled Road From Pakka Sarak to Baloch Mohla,Barohi Mohla,UC Malh-10(Near Kashmir Bismillah Hotel)		
Advisory Consultant	Dr. Ishrat ullah Siddiqui		
Contact Person	Engr. S.M. Tayyab & Muhammad Anas Khan.		
Sample Collected / Given by	Aimstec Pvt Ltd	**Sampling Nature**	Ground Water
Sampling Point	Ground Water	**Sampling Time**	10:00 AM
Sampling Date	2-Nov-21	**Sample Receiving Date**	2-Nov-21
Analysis Completed on	4-Nov-21	**Reporting Date**	5-Nov-21
Sampling Area	Masjid Ali Al Murtaza Memon Goth	**Coordinates**	24°55'30.4"N 67°14'54.8"E

TEST RESULTS

Chemical Analysis

S.No	Parameter	Method	Unit	Test Result(s)	SSDWQ
01	Aluminium	PS 1932 : 2002	Al (mg/L)	0.01	< 0.2
02	Antimony	PS 1932 : 2002	Sb (mg/L)	BDL	≤ 0.005
03	Arsenic	APHA 3500-As	As (mg/L)	0.01	≤ 0.05
04	Barium	PS 1932 : 2002	Ba (mg/L)	0.02	0.7
05	Boron	PS 1932 : 2002	B (mg/L)	0.04	0.3
06	Cadmium	HACH 8017	Cd (mg/L)	BDL	0.01
09	Chloride	ASTM D-512	Cl (mg/L)	531.75	≤ 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)	BDL	< 1.5
14	Lead	HACH 8033	Pb (mg/L)	0.01	< 0.05
15	Manganese	PS 1932 : 2002	Mn (mg/L)	0.01	≤ 0.5
16	Mercury	PS 1932 : 2002	Hg (mg/L)	BDL	≤ 0.001
17	Nitrate	HACH 8171	NO_3 (mg/L)	0.06	≤ 0.5
18	Nitrite	HACH 8507	NO_2 (mg/L)	0.43	≤ 3
19	Nickel	HACH 8037	Ni (mg/L)	BDL	< 0.02
18	Phenolic compounds	ASTM D-1781	Phenols (mg/L)	BDL	≤ 0.002
20	Residual Chlorine	APHA 4500-Cl	R.Cl_2 (mg/L)	0.03	0.2 to 0.5
20	Selenium	HACH 8194	Se (mg/L)	BDL	≤ 0.01
21	Zinc	HACH 8009	Zn (mg/L)	0.13	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 ground water sample results are not within guideline value set by SSDWQ limit.

Note: This report should be reproduced as a whole and not in parts
The values represent sample conditions when monitoring /testing was carried out
The report is not valid for court evidence/judicial knowledge

Sample Analysed by
(Lab Analyst)

Reviewed by
Dr. Ishrat ullah Siddiqui

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Postal Address: Plot No, B-56 / Sector 6-H, Mehran Town, Korangi Industrial Area, Karachi-74900, Pakistan.
Cell: +92-321-922-1123
URL: www.aimstec.com.pk
Email: info@aimstec.com.pk / operation.aimstec@gmail.com

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