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

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN
"Rehabilitation of Existing Road from Machli Chowk to KANUPP (5.9 km)"

Subproject of Karachi Metropolitan Corporation (KMC).

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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
CESMP	:	Construction Environmental and Social Management Plan
CLICK	:	Competitive and Livable City of Karachi
DMCs	:	District Municipal Corporations
EA	:	Environmental Assessment
EIA	:	Environmental Impact Assessment
ERC	:	Emergency Response Center
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
IEE	:	Initial Environmental Examination
KANUPP	:	Karachi Nuclear Power Plant
KMC		Karachi Metropolitan Corporation
LCs	:	Local Councils
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
Rm	:	Running Meter
RoW	:	Right of Way
SEPA	:	Sindh Environmental Protection Agency
SES	:	Socio Economic Survey
SSGC	:	Sui Southern Gas Company
SSO	:	Social Safeguard Officer
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" ptogramme (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 the programme 'Competitive and Livable City of Karachi (CLICK)'. 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 KMC has identified and proposed a subproject/scheme "Rehabilitation of Existing Road from Machli Chowk to Karachi Nuclear Power Plant (KANUPP) 5.9 km" in District Keamari of Karachi, under the COVID-19 Emergency Grant of Component-1. The proposed subproject is the main arterial road of access to all residential community living around the road and the KANUPP. Although this access road is divided into two carriageways, the central island is missing in a small wider section towards the end of the road. In addition to that due to lack of repair and maintenance, there is a need for rehabilitation of the existing road and provision of the necessary road furniture and utilities. Considering the requirement for road work plus the allied utilities (footpath, median barrier (in a limited missing section), street lights, sewerage and storm water drainage) and street furniture (signage & Road marking) will be done under the proposed subproject for rehabilitation. The tentative cost of the sub project, is around: PKR. 800.00 million under the COVID-19 Emergency Grant.

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 WB environmental and social screening guidelines and requires the development of a site-specific Environmental and Social Management Plan (ESMP). In addition, subproject NOC has been acquired from Sindh Environmental Protection Agency (SEPA) against their Review of IEE and EIA Assessment Regulations, 2014.

This ESMP report presents the sub-project site-specific baseline data collected for physical, biological and socio-economic components of environment. 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. The physical environment includes topography, geology and soils, climate, and drainage, water resources, ambient air quality, noise levels and seismicity. Soil investigation was also performed to get the soil profile of the sub project area. Excavation of 7 Test Pits was performed at the depth of 99 cm on dated 20th May, 2021 at every 1.0 km intervals staggered along the centre line of project corridor. According to Building Code of Pakistan, Seismic Provision 2007, the project area lies in Zone 2B which has minor to moderate damaging effects with peak horizontal ground acceleration of 0.08 to 0.24 g.

The terrestrial vegetation of proposed project area is scanty, surrounding land of the sub-project area is mostly covered with scattered natural vegetation of *Prosopis Juliflora*, *Acacia Nilotica*, Calotropis procera and *Duma florulenta* at project site. Median of road is covered with scattered natural vegetation of *Prosopis Juliflora*, *Acacia nilotica* species and dense planted trees of *Conocarpus erectus*. However, no any endangered and threatened specie is being observed and the median trees will be protected by providing mesh chamber over during the construction. In the ROW of the project, there are two to three shrubs (*Acacia nilotica and Prosopis juliflora*) present on each side of the culvert. In total we have approximately 35-40 Nos of wild shrubs that would need removal for site clearance. These shrubs fall in least concern category of IUCN Red list 2021. However, to improve the landscape of the proposed road, a Tree Plantation Plan has been proposed. Under this plan seven different types of plants species and in total 1646 Nos. of plants will be planted. The contractor will be responsible for the implementation of tree plantation plan during the construction phase and KMC to ensure its sustainability.

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.

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. 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 24th April 2021with people of the area as part of the environmental and social screening study. Another round of Consultation Meetings was held on June 07, 2021 for preparation of this ESMP. Generally, the relevant stakeholders and public perception about the subproject is positive, people were found to be aware and convinced and indicated remarkably their support for the implementation of subproject.

The majority of potential adverse impacts will occur during the construction phase, however, given the scope and nature of the works, mitigation measures should be able to alleviate or lessen any potential negative impacts. Minimal and Moderate impacts are discussed in detail of this ESMP. The mitigations for the impacts identified and monitoring requirements are summarized in the ESMP of the report which has been designed to address how the proposed measures will be implemented. 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 adoption of a proper ESMP will enhance the sustainability of subproject. Moreover, the cost for the implementation of construction stage activities is also given in this ESMP which will be included within the civil works contract for this sub-project with total cost of PKR. 1,473,500/.

Chapter 1. INTRODUCTION

1.1. Project Background

Karachi is Pakistan's largest city, its economic and financial hub and main seaport. However, despite its higher contribution to the local and national economy, the city has seen a continued neglect in the development and upkeep of the urban infrastructure and related services over the last few decades. The city of Karachi, 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 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), six 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 the performance of local governments and agencies in Karachi's urban management, financing and service, and to improve business regulation in Sindh with collaborative efforts of the Karachi Municipal Corporation (KMC) and six District Municipal Corporations (DMCs), 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 subprojects for infrastructure and services under their mandate, in line with the needs of citizens and businesses. To assist 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. Subprojects to be implemented by LCs are selected based on a comprehensive screening and risk reduction procedure. The subproject although is being financed through a special/COVID-19 Emergency grant of the World Bank. However, since the subproject being an existing road rehabilitation scheme, therefore the subproject is 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

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

Component 3 – Improving City's Competitiveness and Business Environment

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

1.4. Approved Sub-project

The title of the sub-project is "Rehabilitation of Existing Road from Machli Chowk to Karachi Nuclear Power Plant (KANUPP) 5.9 km". The sub-project has been identified by Karachi Metropolitan Corporation (KMC) in District Keamari of Karachi, under the CLICK interventions.

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

The project only involves up-gradation and rehabilitation of an existing road along an existing route of 5.9 km with no major changes in the Right of Way (RoW) of the road in an area with no major changes in the Right of Way (RoW) as the project involved only rehabilitation of the exiting road. There will be no infrastructural damage to any property. 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 subproject, as presented in the subsequent sections of this document.

[3] Categorization of CLICK Subprojects (EMF) 2019

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

The Environmental Management Framework (EMF) for the CLICK Sub-projects requires that an Environmental and Social Management Plan (ESMP) needs to be included with the subproject application when the eligible subproject includes distinct mitigation measures (physical works or management activities). Therefore, Environmental and Social Management Plan is an integral component of the CLICK Sub-project: "Rehabilitation of Existing Road from Machli Chowk to KANUPP (5.9 km)".

The Environmental and Social Management Plan (ESMP) has been prepared by the KMC using the guidelines provided in the ESMF and Environmental and Social Screening Report (ESR) findings, with active support from the Environmental and Social Cell (ESC) 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 infrastructures and construction.
- Identification of significant environmental and social issues of the proposed sub-project and preparation of the necessary management plans.

The ESMP's scope and level of detail commensurate with the Sub-project's potential impacts and risks. Its key components as per ESMF guidelines are:

S No.	Components	Description
1	Description of adverse effects	The anticipated effects are identified and summarized.
2	Description of mitigation measures	Each measure is described with reference to the effect(s) it is intended to deal with. As needed, detailed plans, designs, equipment descriptions, and operating procedures are described.
3	Description of monitoring program	The monitoring plan identifies what information will be collected, how, where and how often. It also indicates at what level of effect there will be a need for further mitigation.
4	Responsibilities	The people, groups, or organizations that will carry out the mitigation and monitoring activities are defined, as well as to whom they report and are responsible. There may be a need to train people to carry out these responsibilities, and to provide them with equipment and supplies.
5	Implementation schedule	The timing, frequency and duration of mitigation measures and monitoring are specified in an implementation schedule, and linked to the overall subproject schedule

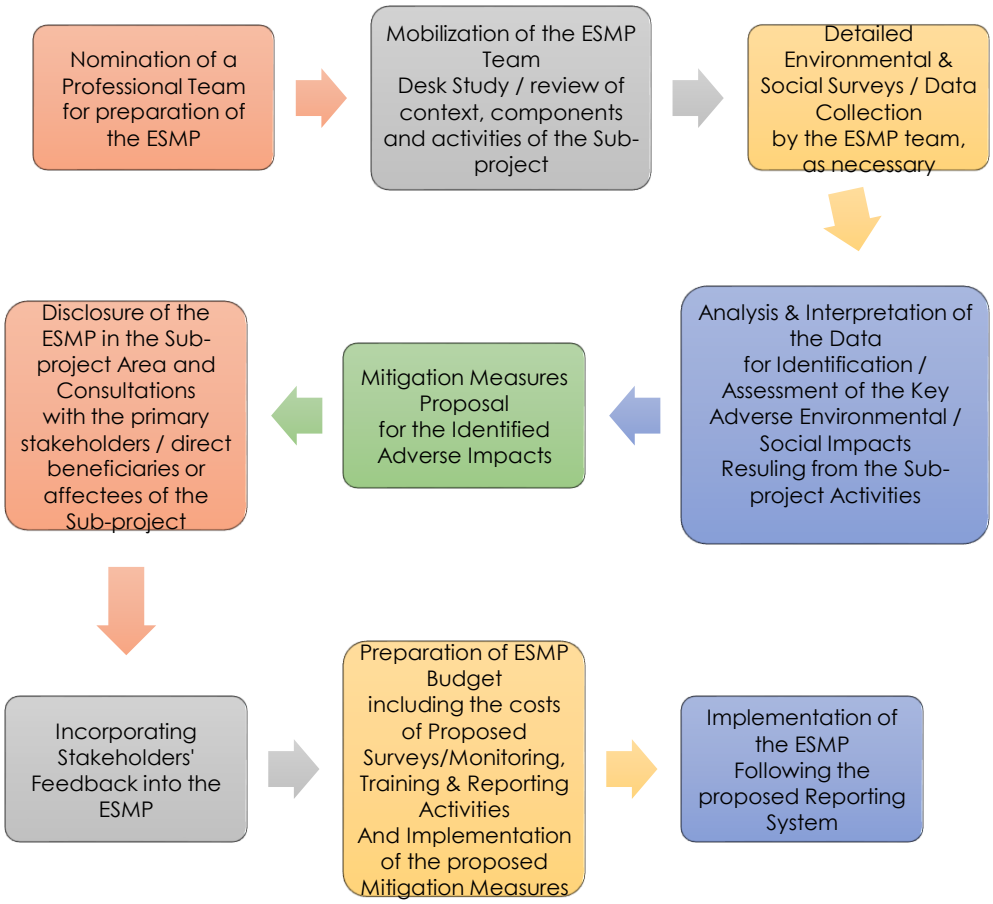
Following the preparation of the Environmental and Social Screening Report (ESR), consultations on the ESMP were held. The comments raised during the consultations, were incorporated in the ESMP before making it a part of the sub-project documents that includes the civil works contract of the sub-project, 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 safeguards in connection with the proposed sub-project. The document not only presents an introduction to the CLICK project and its main development objectives in below section.

- Section 1: Executive Summary
- Section 2: Introduction of Project
- Section 3: Detail of the Environmental and Social Management Plan
- Section 4: Detail description of the proposed sub-project covering design criteria adopted for the sub-project
- Section 5: A quick review of the applicable laws
- Section 6: Environmental and Social Baseline of sub project.
- Section 7: Stakeholder Consultation process
- section 8: Identification of social and environmental impacts and their respective mitigation measures potential impacts,
- Section 9: Environmental and Social management Plan
- Section 10: Highlighting the institutional framework, task assigned to each group, capacity building and other needs for effective implementation of the ESMP, and the Implementation Schedule
- Section 11: Annexures covering the various aspects of the ESMP including, Waste Management Plan, Traffic Management Plan, Tree Plantation Plan, Chance Find Procedures, Covid-19 SoPs for Construction issued by the GOP / GoS. Grievance Redress Mechanism (GRM)

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. These data form the baseline against which possible changes due to the construction are defined.

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 screening reports and checklists 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 and responsibility in this Environmental and Social Management Plan presents a discussion of the environmental and social management structure and activities that will be undertaken as part of overall Project implementation.
The roles and responsibilities of various agencies in undertaking these activities are then defined, include identification of the institutional strengthening activities that will be required to allow those organizations to fulfill their nominated roles and responsibilities. The environmental monitoring plan has been prepared and the cost associated with its implementation has been identified. The roles and responsibilities of the proponent and the institutions are identified in table 2.1. as following

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

AGENCY	RESPONSIBILITIES
Karachi metropolitan Corporation (KMC)	▪ Overall responsibility for project construction and operation and maintenance; ▪ Ensure that funds are available to properly implement all agreed environmental and social safeguards measures; ▪ Ensure that the project, complies with the provisions of WB's Operational Policy (OP) ▪ Ensure that Project complies with Govt 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 at least quarterly safeguards monitoring reports to WB; ▪ Promote institutional cooperation with General Labor Inspectorate to enforce compliance with labour laws, including occupational, health and safety rules;
Project Implementation Unit (PIU)	▪ Ensure that ESMP provisions are implemented to mitigate environmental and social impacts to acceptable levels; ▪ Ensure that Project complies with WB's OP and government laws and regulations; ▪ Engage and retain staff within PIU as environmental safeguards officer (ESO) and social safeguards officer (SSO); ▪ 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; ▪ Ensure that environmental and social protection and mitigation measures in the ESMP are incorporated into the detailed design

	including climate change adaptation measures; ▪ Ensure that requisite measures from the ESMP are incorporated into the bid and contract documents; ▪ Undertake environmental and social management capacity building activities for KMC and orientation and awareness training for contractors; ▪ Ensure that KMC has obtained the necessary environmental NOC (s) from SEPA prior to award of civil works contracts. In this case the necessary NOC from SEPA has been received attached as Annex J. ▪ Ensure that contractors obtain a necessary environmental license(s) from SEPA prior to the commencement of civil works contracts; ▪ Assist KMC to establish 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 monitor of the implementation of the ESMP (mitigation and monitoring measures); ▪ Prepare quarterly or semi-annual environmental and social monitoring reports for submission to WB;
Supervision Consultant	▪ Provide training and capacity building to KMC and PIU staff and provide training to contractors prior to the submission of contractor's Construction Environmental and Social Management Plan (CESMP); ▪ Engage and retain two full-time staff within PIU as environmental consultant officer and social safeguards consultant; ▪ Incorporate into the project design the environmental and social protection and mitigation measures identified in the ESMP for the design stage including climate change adaptation measures included in the ESMP; ▪ During detailed design notify PIU of any change in alignment or project design/components and provide all necessary information to the 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 the ESMP prepared during loan processing); ▪ Update, based on detailed design, the ESMPs and other environmental and social protection and management measures to be incorporated in bid and contract documents; ▪ Assist PIU in the review and approval of the contractor's CESMP for sub-project; ▪ Assist PIU to undertake monitoring of the implementation of the ESMP (mitigation and monitoring measures) including the incorporation of reports from the contractors; ▪ Assist PIU to prepare quarterly progress reports and Semi -annual safeguards monitoring reports for submission to WB and KMC as necessary including the incorporation of reports from the contractors and corrective action requests to Contractor;
Contractor	▪ Participate in the induction training on ESMP provisions and

	requirements delivered by the PIU; ▪ 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, as necessary; ▪ Based on the results of ESMP monitoring, cooperate with the PMU to implement environmental and social corrective actions and corrective action plans, as necessary; ▪ Respond promptly and efficiently to requests and instructions from PIU for environmental corrective actions and corrective actions and implement additional environmental and social mitigation measures, as necessary; ▪ Provide sufficient funding and human resources for the proper and timely implementation of required mitigation measures in the Environmental and Social Management Plan.

2.5. Reporting System

A systematic Reporting System is proposed to be followed 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. 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.

Consultant's Report

- The Supervision Consultant shall assist the PIU and check/investigate the

implementation of environmental mitigation measures by the Contractor on a monthly basis. Subsequently, the SC shall report their investigation result of environmental mitigation measures implementation (done by Contractor) to the PIU on a quarterly basis.

- The consultant's quarterly Progress Report to 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 report every six months on the environmental monitoring to the PMU WB with a summary of environmental monitoring and the implementation of mitigation measures for the sub-project.
- These reports will incorporate the main items raised in the Contractor's monthly reports and the environmental monitoring reports prepared by the SC and endorsed by PIU.

Chapter 3. SUB-PROJECT DESCRIPTION

3.1. Details of the Sub-Project

Mauripur road from Machli chowk to KANUPP is the main arterial road of access to all residential community living around the road and the Karachi Nuclear Power Plant (KANUPP). Although this access road is divided into two carriageways, the central island is missing in a small wider section towards the end of the road. In addition to that due to lack of repair and maintenance, as per the site visit, it is observed there is need for rehabilitation of the existing road and provision of the necessary road furniture and utilities.
Considering the requirement for road work plus the allied utilities (footpath, median barrier (in a limited missing section), street lights, sewerage and storm water drainage)and street furniture (signage & Road marking) for rehabilitation on the existing road, the KMC is planning to restore and rehabilitate the road section from Machli chowk to KANUPP.
Tentative cost of the sub project, Rehabilitation of road from Machli chowk to KANUPP at Mauripur road (5.9 km) is around: PKR. 800.00 million under the COVID-19 Emergency Grant.

3.2. Sub Project Features

The Road from Machli Chowk to KANUPP is 5.9 km in length, which needs rehabilitation along with the required facilities like footpath, median barrier (in a limited missing section), street lights, sewerage and storm water drainage. The subproject salient features can be seen in Table 2.1.

- Jurisdiction of Proposed Road: KMC
- Total Length: 5.9 km
- Street Poles: 260 Nos.
- Street lights~ 520 Nos. (120W LED Lights)
- Number of Lanes : 04
- Total Duration of sub-project: 12 months
- Labor requirements: 500 persons estimated (unskilled)
- Professional staff 20
- Supervision consultant staff 10

3.2.1. Design and Scope of Work

I. Formation width: 26.70 m
II. Asphalt Base Course: 8 cm
III. Aggregate Base Course: 25 cm
IV. Asphalt wearing Course: 5 cm thick
V. Rehabilitation of existing culverts: 16 Nos

3.2.2. Street Lighting

- Installation of Street Light Poles: 260 Nos. (double arm pole street lighting)
- Installation of Street light fixture with 120W LED: 520 Nos.
- Installation of 3 Core grade cable from main connector to street light fixtures:750 Rm (Running Meter)

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/culverts rehabilitation.	• Road rehabilitation component comprises 5.9 km of road. • • 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 and signage; • The intersection of earthen/paved tracks will be improved; • Rehabilitation work for the road comprises asphaltic concrete (AC) overlay, reshaping of shoulders and improved side and cross drains. Betterment works will be on sections too heavily damaged for periodic maintenance. They will include pavement reconstruction, drainage improvements, strengthening and minor widening (within the existing Right of Way - ROW) of pavements and shoulders, and resurfacing; and • Pavement marking and safety barriers and road signs will be included to improve traffic safety.

Table 3-2: Road Design Criteria

Road Design Criteria					
S.No.	Design Parameters	Values		Unit	AAHSHTO POLICY 2011 reference chapter
	Design Speed	80 Km/hr	60 Km/hr		
1	Design Vehicle	Single Unit Truck			2-1
Cross Sectional Elements					
2	No. of Lanes	04 Lanes			
3	Lane Width	3.65	3.65	Meters	4-7
4	Outer Shoulder	3	3	Meters	4-10
5	Inner Shoulder	1	1	Meters	4-10
6	Min. Median Width	3.5	3.5	Meters	4-34
7	Barrier Width	0.6	0.6	Meters	
8	Footpath Width	3.0	3.0	Meters	
9	Pavement Cross Slope	2.0	2.0	%	4-1
10	Shoulder Cross Slope	4.0	4.0	%	4-1

S. No.	Design Parameters	Values		Unit	AAHSHTO POLICY 2011
	Design Speed	80 Km/hr	60 Km/hr		
Horizontal Alignment					
11	Min. Stopping Sight Distance	130	85	Meter	3-4
12	Max. Rate of Super elevation	4.0%	4.0%	%	3-30
13	Min. Radius of Curve	280	135	Meter	3-32
14	Min. Super elevation Runoff	43	36	Meter	3-64
15	Min. Tangent Runout	22	18	Meter	3-66
Vertical Alignment					
16	Max. Allowable Grade	4.0%	4.0%	%	
17	K value (crest)	26	11	m/A%	3-155
18	K value (sag)	30	18	m/A%	3-161

3.3. Sub-Project Location

The proposed sub-project starts at Machli Chowk and ends at KANUPP Gate, Hawksbay area Karachi.

Figure 3-1: Location Map of Machli Chowk road to KANUPP

3.4. Sub-Project Significance

Rehabilitation and provision of such projects improves road safety and traffic flow, strengthens the communities and makes the cities and neighborhoods more attractive and competitive places to live and work.
In addition, the proposed road is tourism-oriented as it connects tourists with one of the oldest beach spots of Karachi, where a number of famous tourist resorts are present in the area. Every day a large number tourists visit there and enjoy picnicking, swimming, fishing, camel and horse riding. The betterment of the proposed road will attract more and more tourists to the area. Therefore, the proposed road would not only resolve the traffic issues in the locality but also promote tourism and recreational activities along the Hawksbay beach.
In general, the project has the following objectives:

- To provide safer transport facilities to the tourists and residents traveling from city.
- 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.

3.5. Subproject Environmental Setting

The proposed sub-project site is located in the sub-urban setting of District Keamari, Karachi. For a better understanding of the adjoining environment, important landmarks are identified with respect to accessibility to the project area i.e., Hawksbay beach huts, KANUPP, Dua restaurant, Paradise point. The proposed sub-project area lies in the South Western corner of the city and sparsely populated sub- urban area in the Hawksbay town, District Keamari and the located at the Paradise Point in Karachi, Sindh, Pakistan. The area starts from a low-income residential locality. Photographs of the surrounding of the proposed project can be seen as **Annex B**.

3.6. Resource Use Matrix

Construction Camp and Housing Facilities

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

1. Site Preparation (clearing, land preparation, 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.).

Resource Use Matrix for on-site services at Camp site			
S.NO	**Items**	**Source**	**Quantity**
1	Water Consumption	Water Tanker	300 – 400 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	Living Area Camp	Tents or Cabins	300-600 labor Persons
5	Construction Time		12 months
Note: 1. All resources may vary according to the use of services required on site during the real time needs as per the given or submittals of contractor according to the need of project.			

3.7. Sub-Project Commencement Details

The sub-project construction activities are expected to be initiated by October -2021 which will be continued till September 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 FY 2021-22
Expected year for completion	November -2022

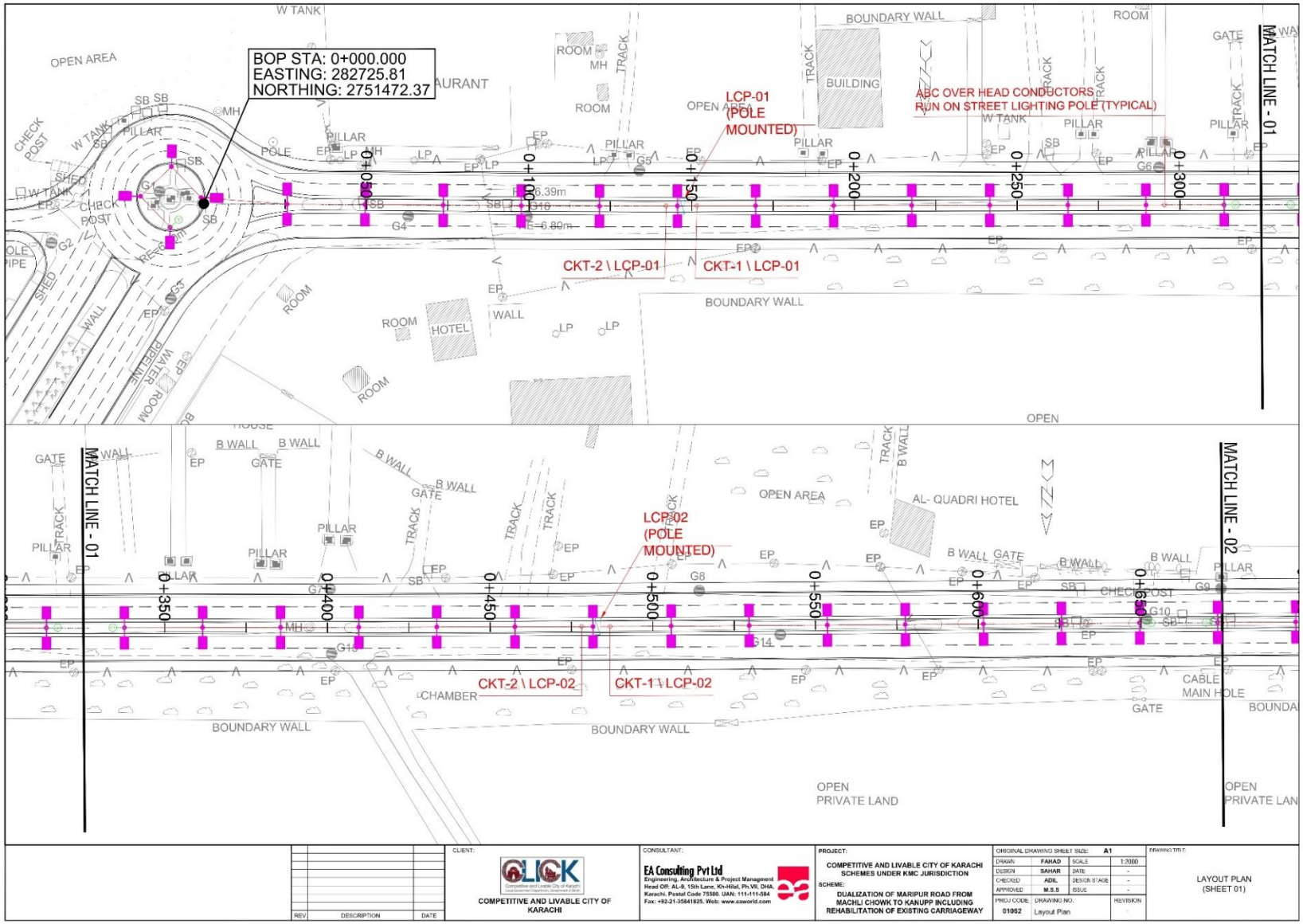
3.8. Sub-Project Activities

3.8.1. Design Phase

This phase provides the basis for construction activities, adopted methodology and technologies that will be involved. To design the sub-project, consultancy services have been taken onboard for providing assistance in planning construction activities, selection of sites, architectural/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-projects) and contract management under CLICK.

After the World Bank approval, the consultant will assist in detailed architectural/engineering design and provision of construction drawings for the sub-project.

Figure 3-2: Road from Machli Chowk to KANUPP (5.9 km) ROW with street Lights and culvert existing position shown in plan view.


BOP STA: 0+000.000
EASTING: 282725.81
NORTHING: 2751472.37
LCP-01 (POLE MOUNTED)
ABC OVER HEAD CONDUCTORS RUN ON STREET LIGHTING POLE (TYPICAL)
CKT-2 \ LCP-01
CKT-1 \ LCP-01
LCP-02 (POLE MOUNTED)
CKT-2 \ LCP-02
CKT-1 \ LCP-02
MATCH LINE - 01
MATCH LINE - 02
BOUNDARY WALL
OPEN AREA
OPEN PRIVATE LAND
AL- QUADRI HOTEL
HOTEL
CHAMBER
CABLE MAIN HOLE
0+000
0+050
0+100
0+150
0+200
0+250
0+300
0+350
0+400
0+450
0+500
0+550
0+600
0+650
CLIENT:
COMPETITIVE AND LIVABLE CITY OF KARACHI
CONSULTANT:
EA Consulting Pvt Ltd
Engineering, Architecture & Project Managment
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Fax: +92-21-35841825. Web: www.eaworld.com
PROJECT:
COMPETITIVE AND LIVABLE CITY OF KARACHI SCHEMES UNDER KMC JURISDICTION
SCHEME:
DUALIZATION OF MARIPUR ROAD FROM MACHLI CHOWK TO KANUPP INCLUDING REHABILITATION OF EXISTING CARRIAGEWAY
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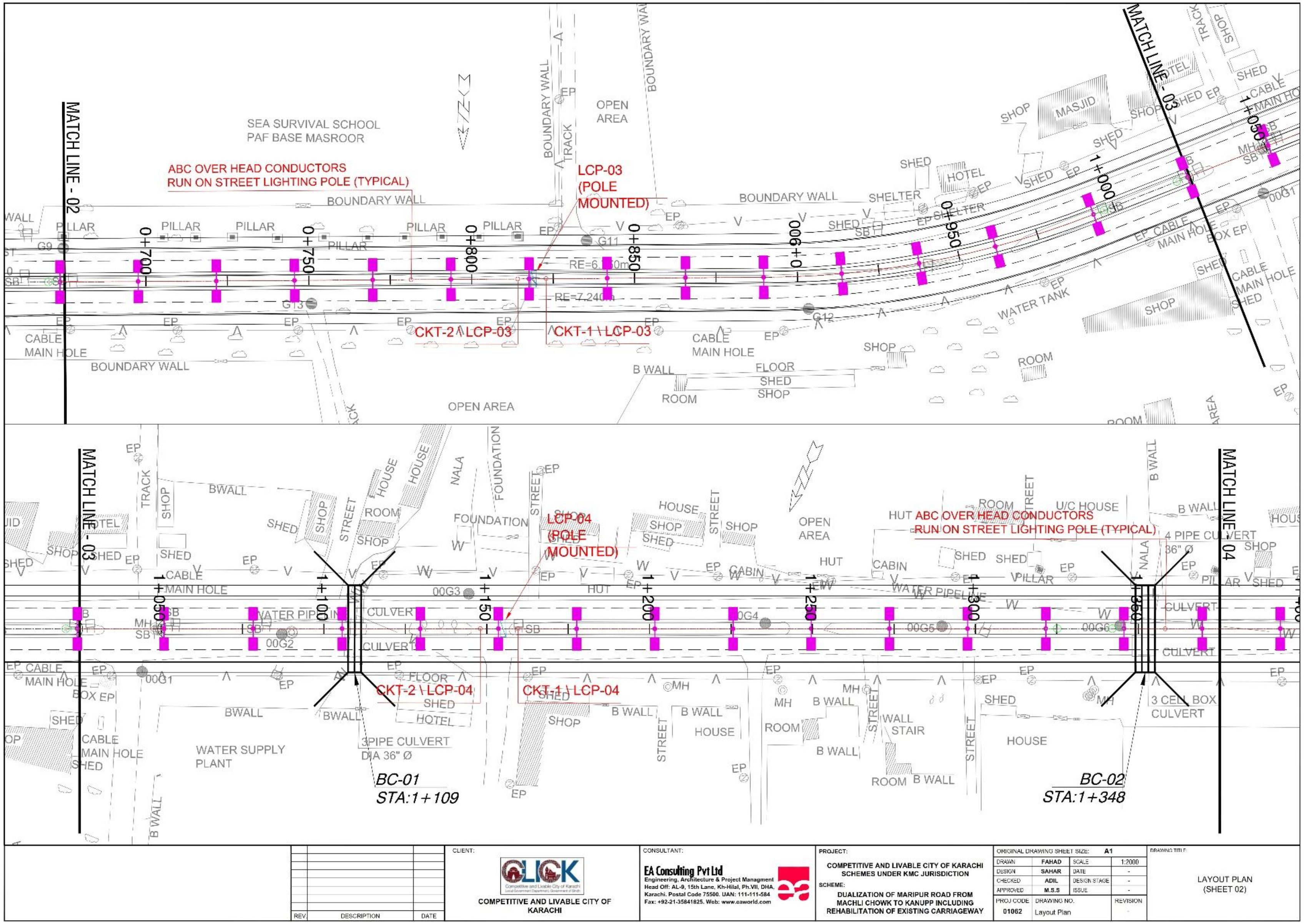
MATCH LINE - 02
SEA SURVIVAL SCHOOL
PAF BASE MASROOR
ABC OVER HEAD CONDUCTORS
RUN ON STREET LIGHTING POLE (TYPICAL)
LCP-03
(POLE
MOUNTED)
CKT-2 \ LCP-03
CKT-1 \ LCP-03
OPEN
AREA
BOUNDARY WALL
OPEN AREA
0+700
0+750
0+800
0+850
0+900
0+950
1+000
1+050
MATCH LINE - 03
MASJID
WATER TANK
LCP-04
(POLE
MOUNTED)
CKT-2 \ LCP-04
CKT-1 \ LCP-04
ABC OVER HEAD CONDUCTORS
RUN ON STREET LIGHTING POLE (TYPICAL)
1+100
1+150
1+200
1+250
1+300
1+350
WATER SUPPLY
PLANT
3PIPE CULVERT
DIA 36" Ø
BC-01
STA:1+109
BC-02
STA:1+348
3 CELL BOX
CULVERT
4 PIPE CULVERT
36" Ø
MATCH LINE - 04
CLIENT:
COMPETITIVE AND LIVABLE CITY OF KARACHI
CONSULTANT:
EA Consulting Pvt Ltd
Engineering, Architecture & Project Managment
PROJECT:
COMPETITIVE AND LIVABLE CITY OF KARACHI
SCHEMES UNDER KMC JURISDICTION
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DUALIZATION OF MARIPUR ROAD FROM
MACHLI CHOWK TO KANUPP INCLUDING
REHABILITATION OF EXISTING CARRIAGEWAY
ORIGINAL DRAWING SHEET SIZE: A1
DRAWN FAHAD
DESIGN SAHAR
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APPROVED M.S.S
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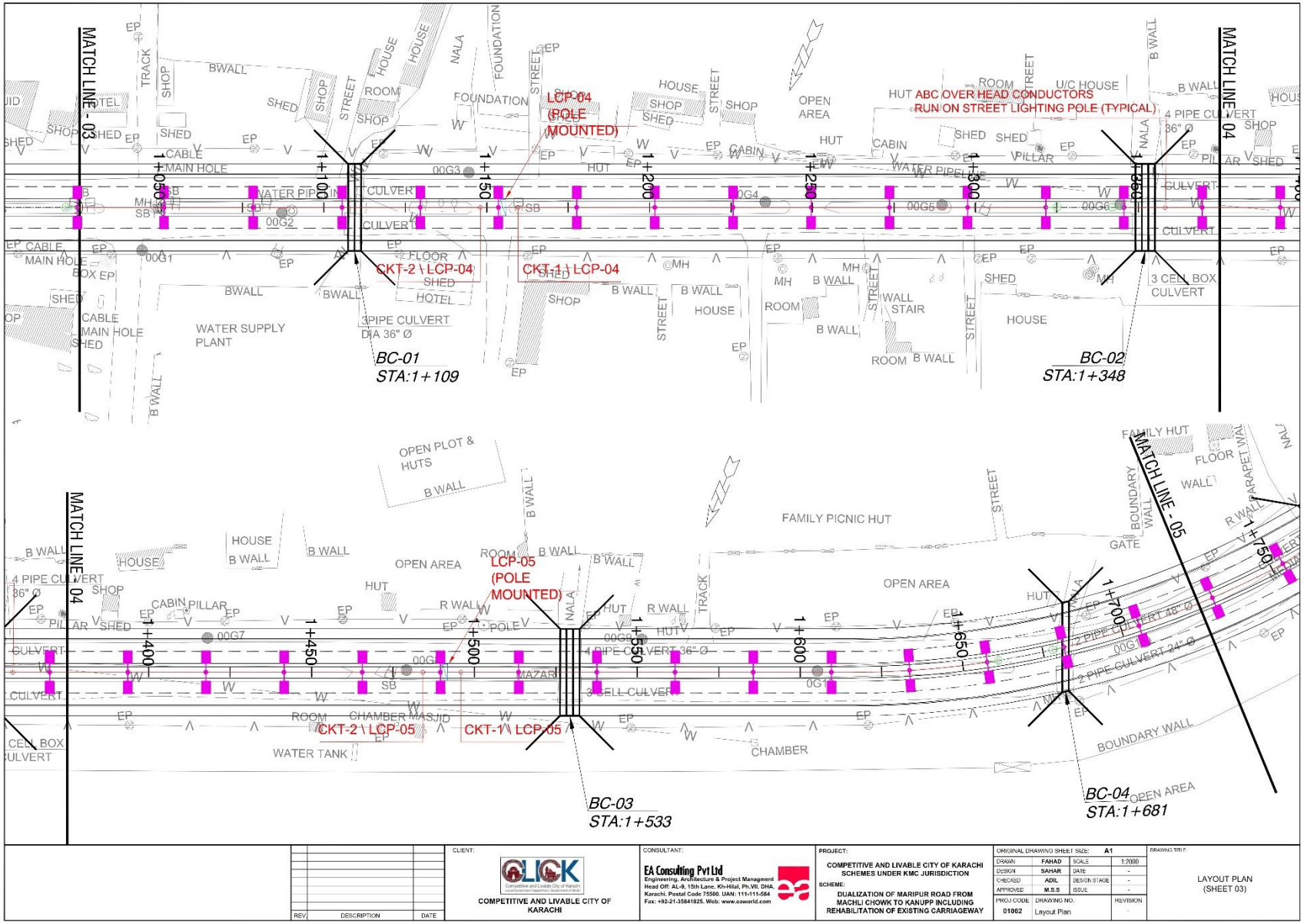

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SCHEME: DUALIZATION OF MARIPUR ROAD FROM MACHLI CHOWK TO KANUPP INCLUDING REHABILITATION OF EXISTING CARRIAGEWAY

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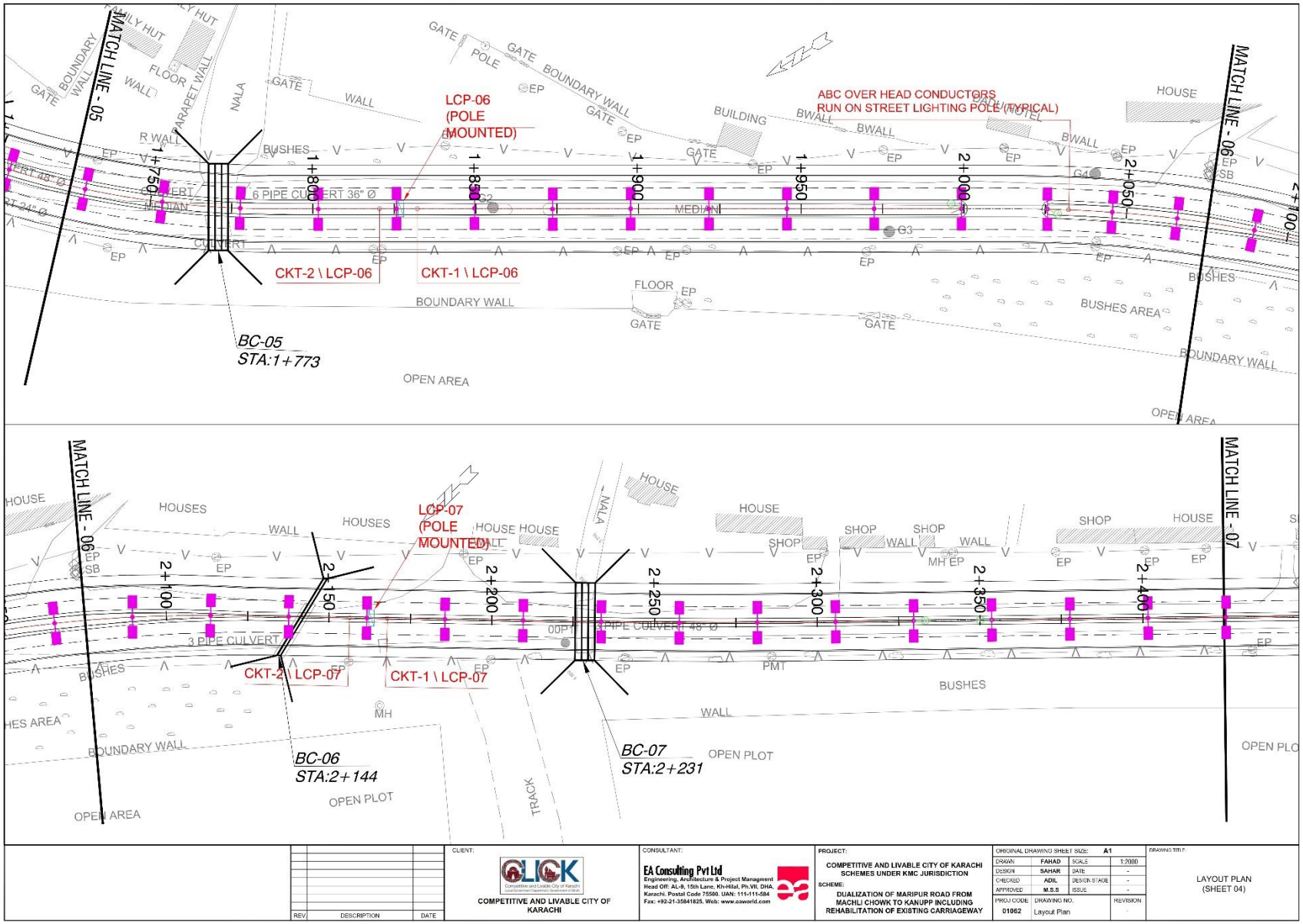

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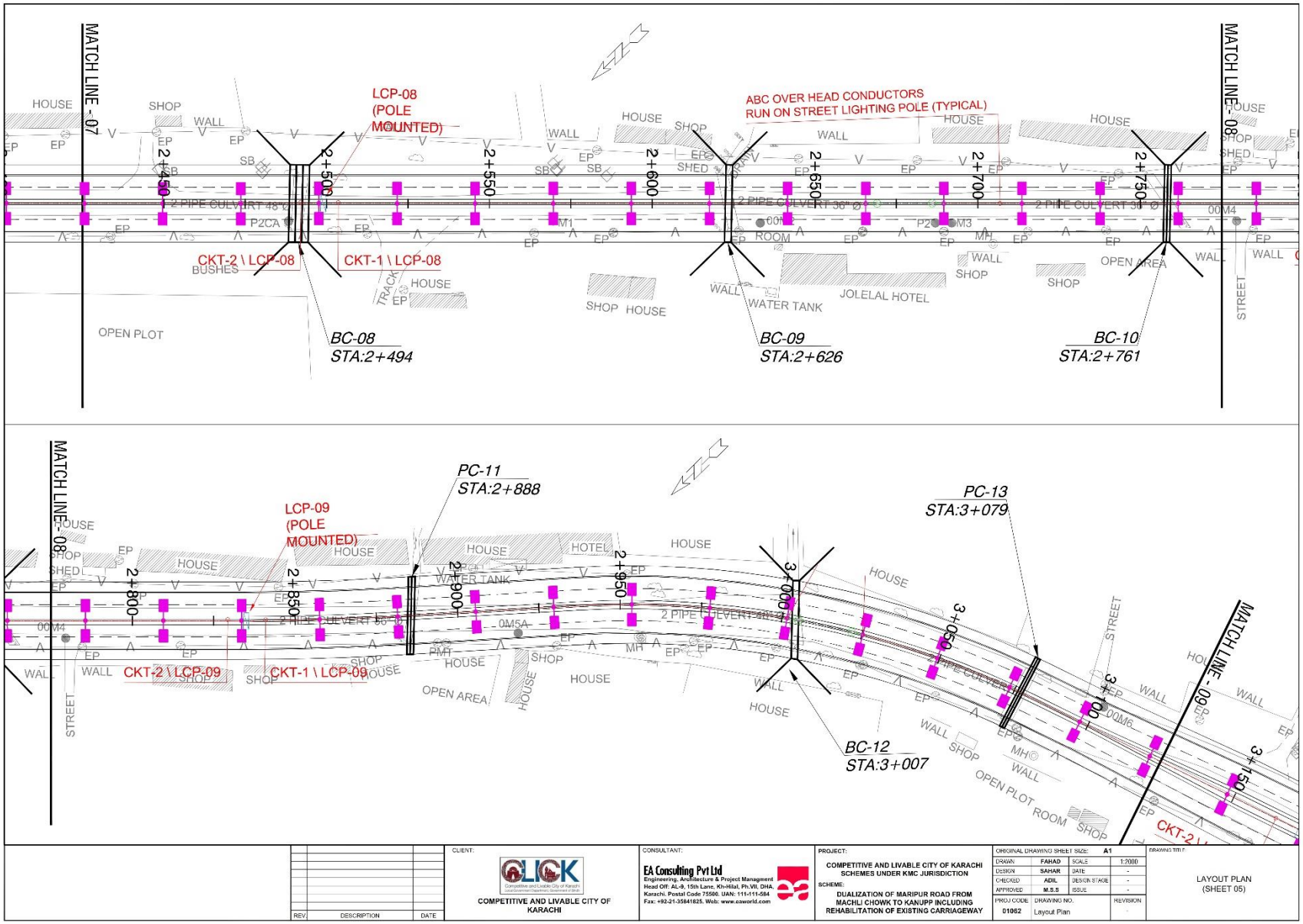

REV	DESCRIPTION	DATE

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SCHEME: DUALIZATION OF MARIPUR ROAD FROM MACHLI CHOWK TO KANUPP INCLUDING REHABILITATION OF EXISTING CARRIAGEWAY

ORIGINAL DRAWING SHEET SIZE: A1

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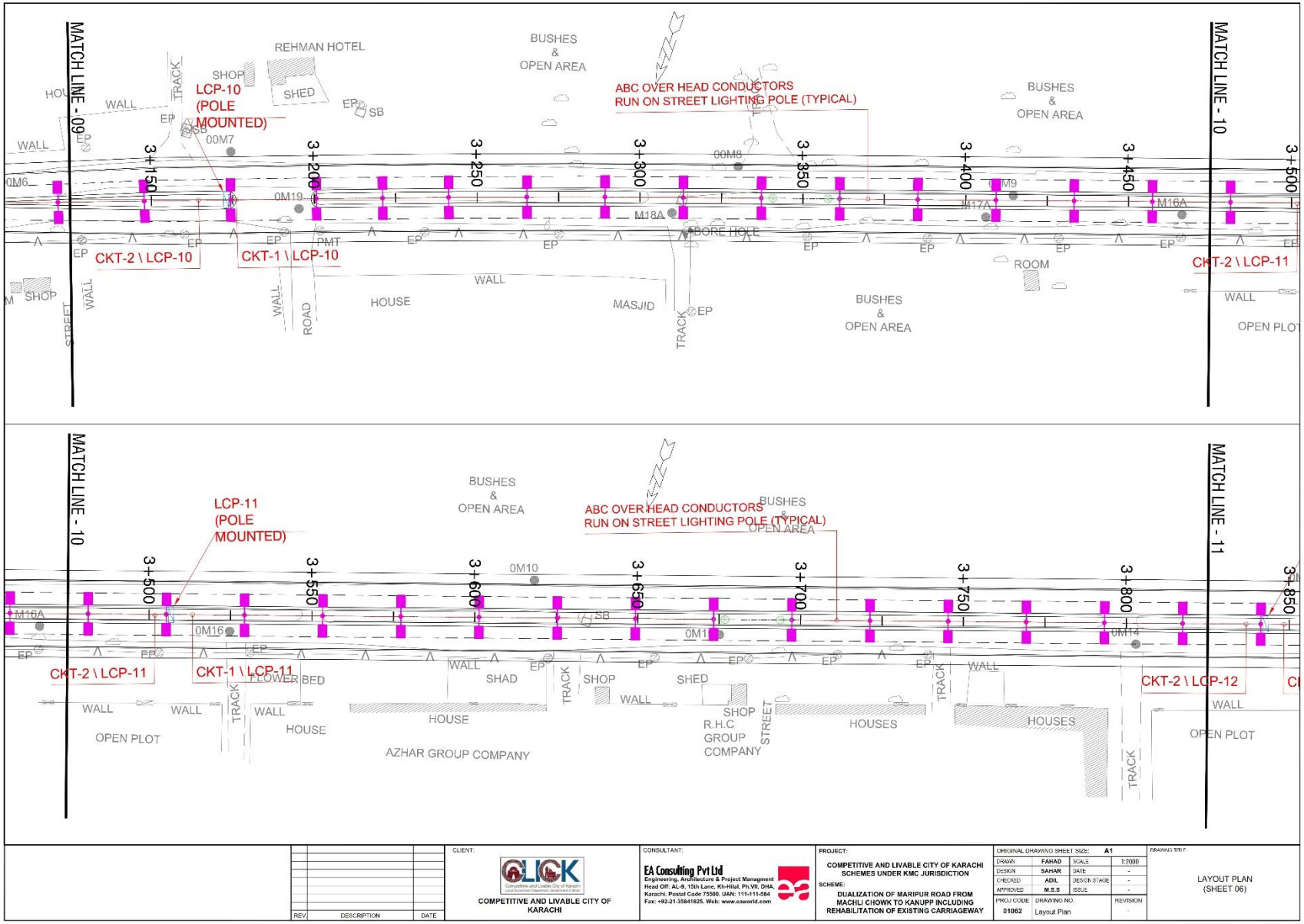
MATCH LINE - 09
MATCH LINE - 10
MATCH LINE - 11
REHMAN HOTEL
SHOP
SHED
LCP-10 (POLE MOUNTED)
ABC OVER HEAD CONDUCTORS RUN ON STREET LIGHTING POLE (TYPICAL)
BUSHES & OPEN AREA
WALL
TRACK
EP
SB
00M7
00M8
0M6
0M19
M18A
M17A
M16A
M9
3+150
3+200
3+250
3+300
3+350
3+400
3+450
3+500
CKT-2 \ LCP-10
CKT-1 \ LCP-10
CKT-2 \ LCP-11
PMT
BORE HOLE
ROOM
HOUSE
MASJID
ROAD
STREET
OPEN PLOT
LCP-11 (POLE MOUNTED)
ABC OVER HEAD CONDUCTORS RUN ON STREET LIGHTING POLE (TYPICAL)
0M10
0M16
0M15
0M14
3+500
3+550
3+600
3+650
3+700
3+750
3+800
3+850
CKT-2 \ LCP-11
CKT-1 \ LCP-11
CKT-2 \ LCP-12
FLOWER BED
SHAD
SHED
SHOP
R.H.C GROUP COMPANY
AZHAR GROUP COMPANY
HOUSES
OPEN PLOT
CLIENT:
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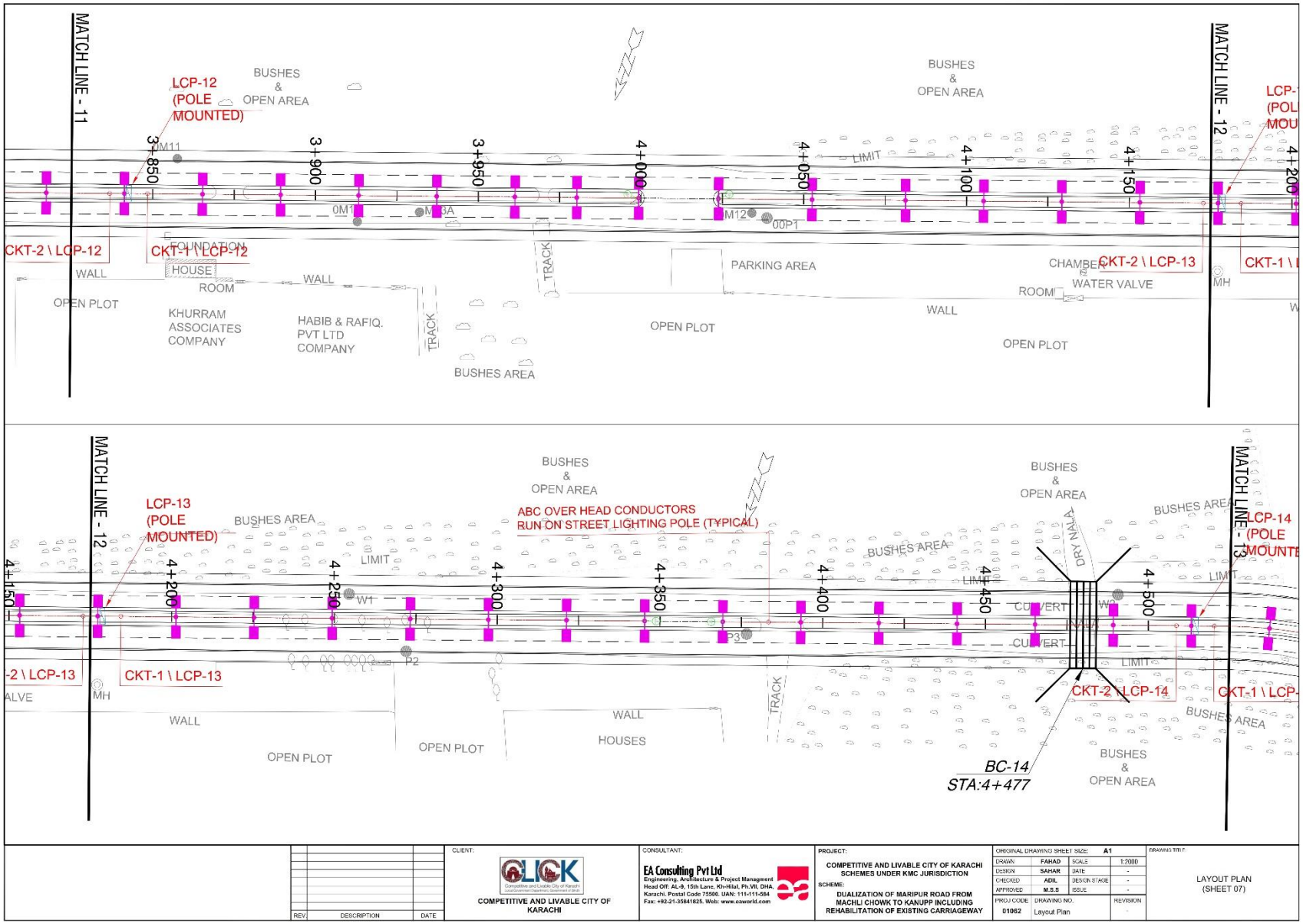

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SCHEME: DUALIZATION OF MARIPUR ROAD FROM MACHLI CHOWK TO KANUPP INCLUDING REHABILITATION OF EXISTING CARRIAGEWAY

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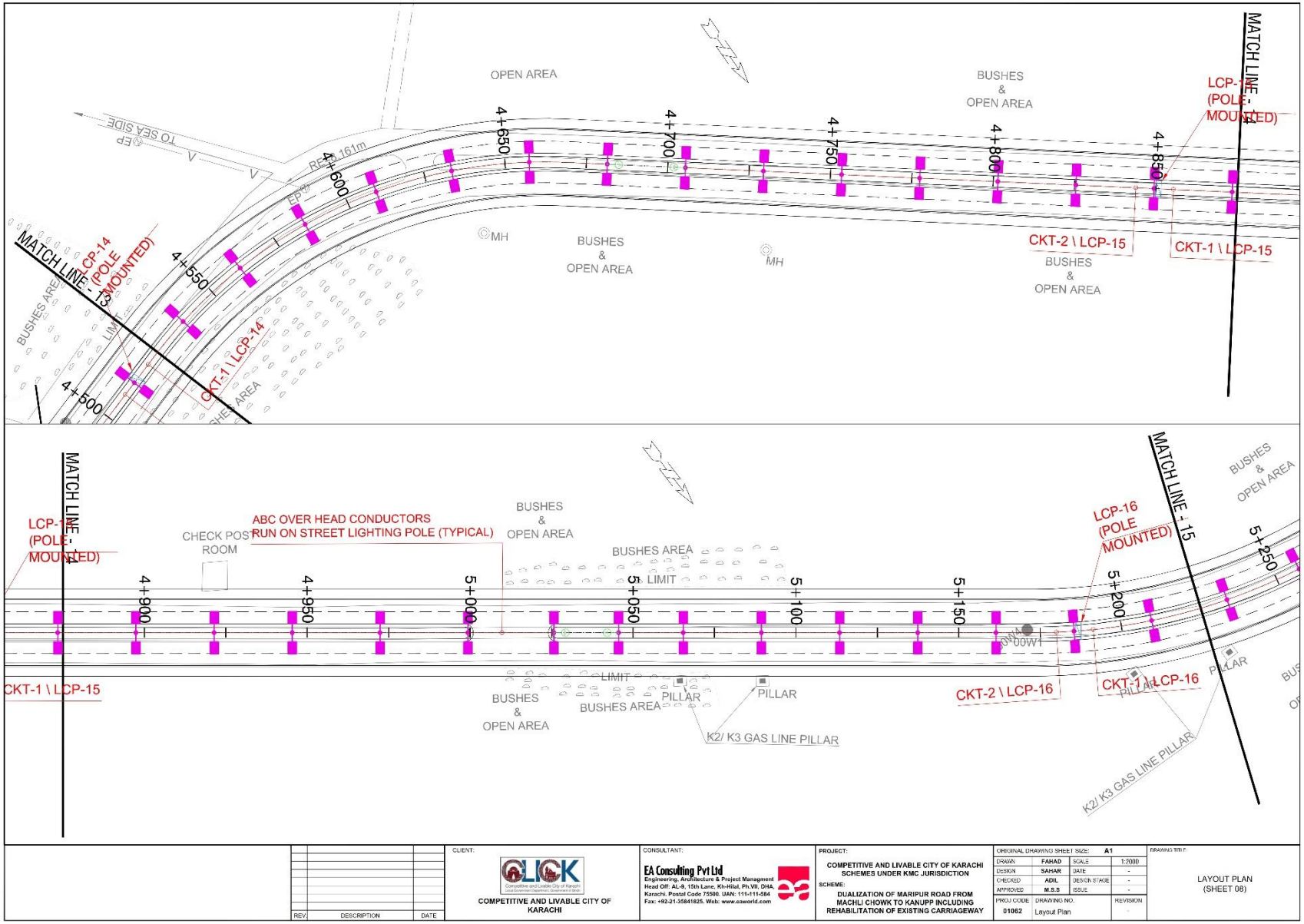

REV	DESCRIPTION	DATE

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CONSULTANT: EA Consulting Pvt Ltd
Engineering, Architecture & Project Managment
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SCHEME: DUALIZATION OF MARIPUR ROAD FROM MACHLI CHOWK TO KANUPP INCLUDING REHABILITATION OF EXISTING CARRIAGEWAY

ORIGINAL DRAWING SHEET SIZE: A1

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CHECKED	ADIL	DESIGN STAGE	-
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REVISION	-		

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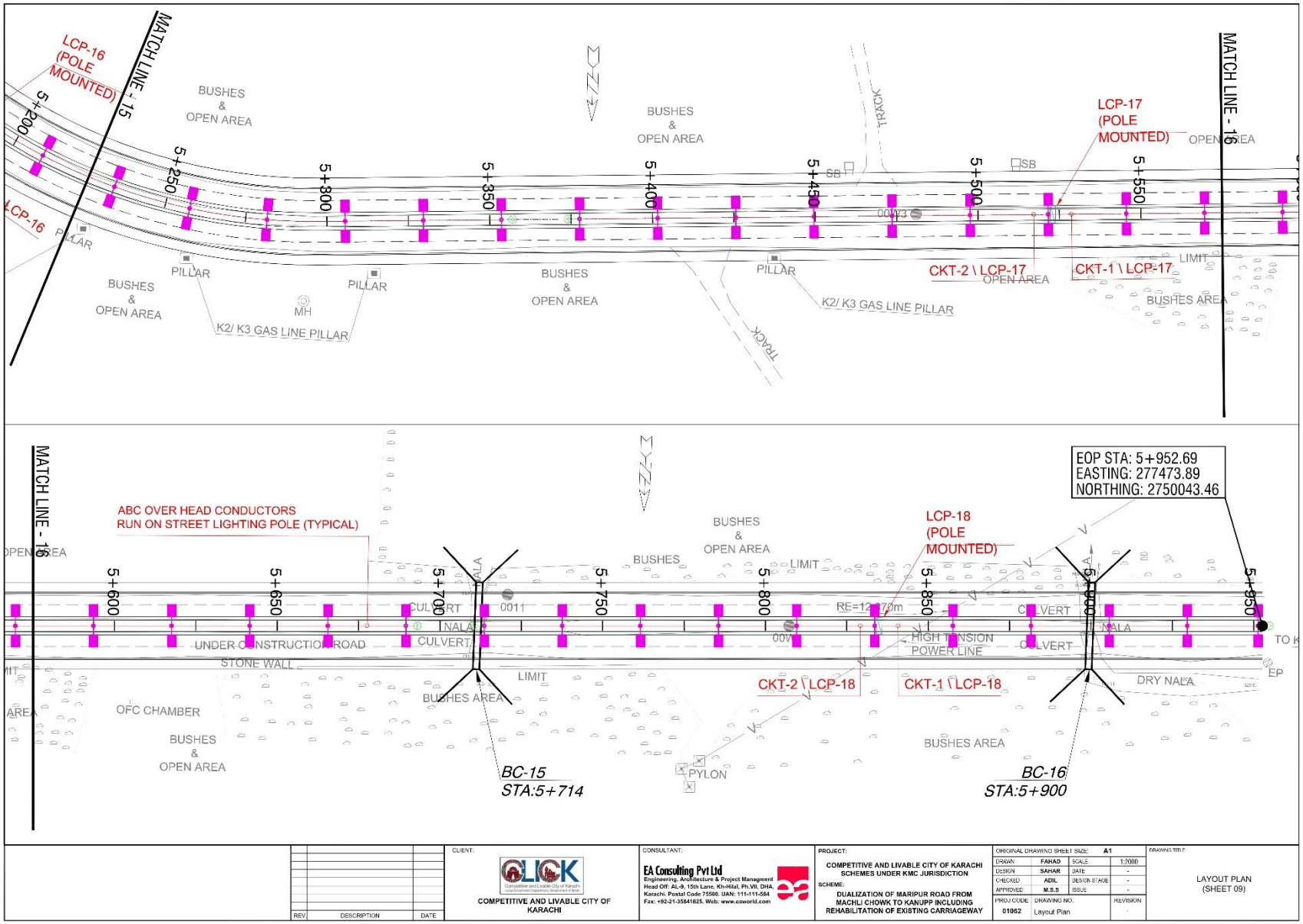
MATCH LINE - 15
MATCH LINE - 16
LCP-16 (POLE MOUNTED)
LCP-17 (POLE MOUNTED)
LCP-18 (POLE MOUNTED)
5+200
5+250
5+300
5+350
5+400
5+450
5+500
5+550
5+600
5+650
5+700
5+750
5+800
5+850
5+900
5+950
BUSHES & OPEN AREA
PILLAR
MH
K2/ K3 GAS LINE PILLAR
TRACK
SB
CKT-2 \ LCP-17
CKT-1 \ LCP-17
OPEN AREA
BUSHES AREA
LIMIT
ABC OVER HEAD CONDUCTORS
RUN ON STREET LIGHTING POLE (TYPICAL)
EOP STA: 5+952.69
EASTING: 277473.89
NORTHING: 2750043.46
CULVERT
NALA
UNDER CONSTRUCTION ROAD
STONE WALL
OFC CHAMBER
HIGH TENSION POWER LINE
CKT-2 \ LCP-18
CKT-1 \ LCP-18
DRY NALA
PYLON
BC-15
STA:5+714
BC-16
STA:5+900
TO K
EP
CLIENT:
COMPETITIVE AND LIVABLE CITY OF KARACHI
CONSULTANT:
EA Consulting Pvt Ltd
Engineering, Architecture & Project Managment
Head Off: AL-9, 15th Lane, Kh-Hilal, Ph.VII, DHA, Karachi. Postal Code 75500. UAN: 111-111-584
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ORIGINAL DRAWING SHEET SIZE: A1
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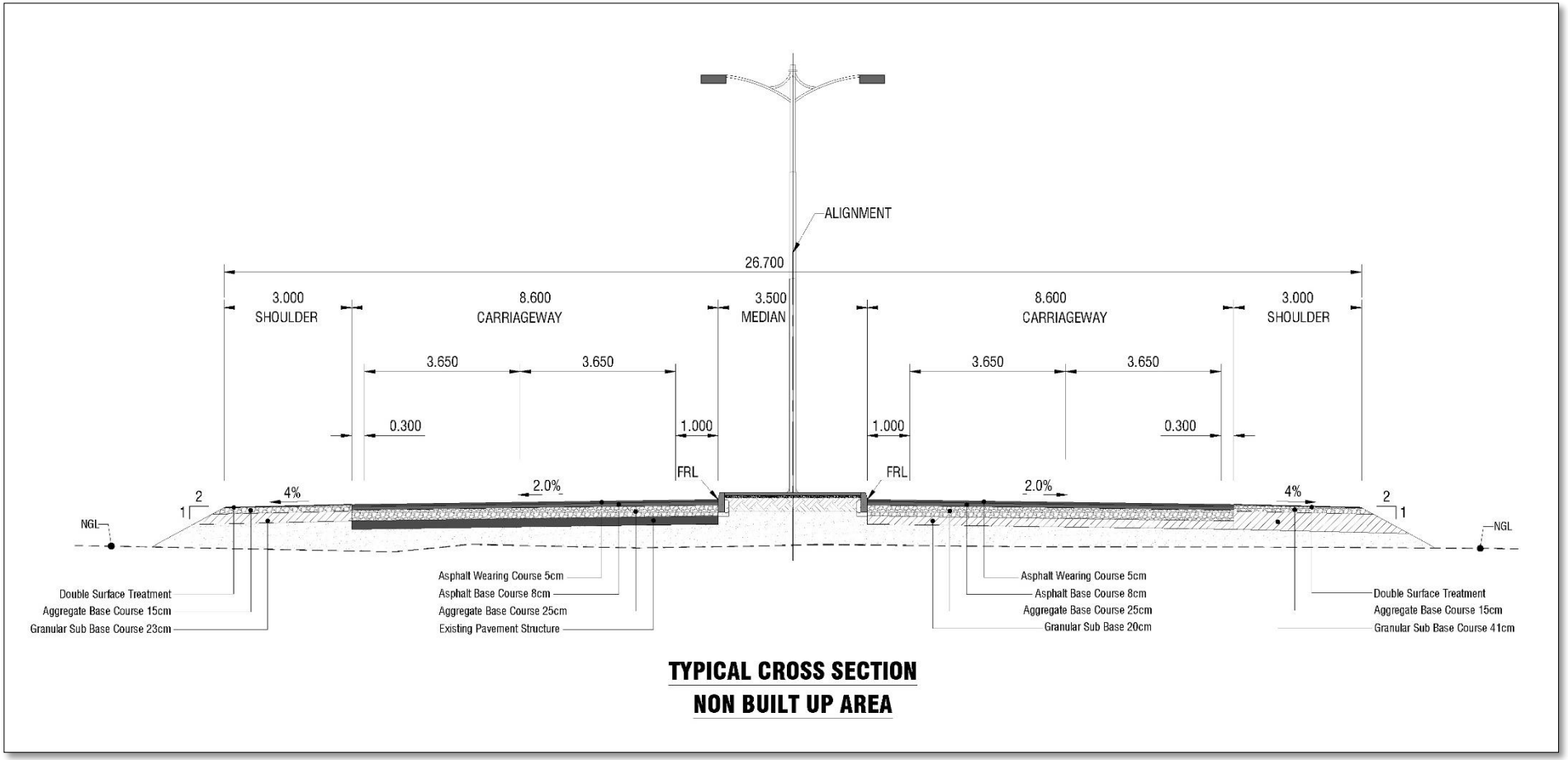


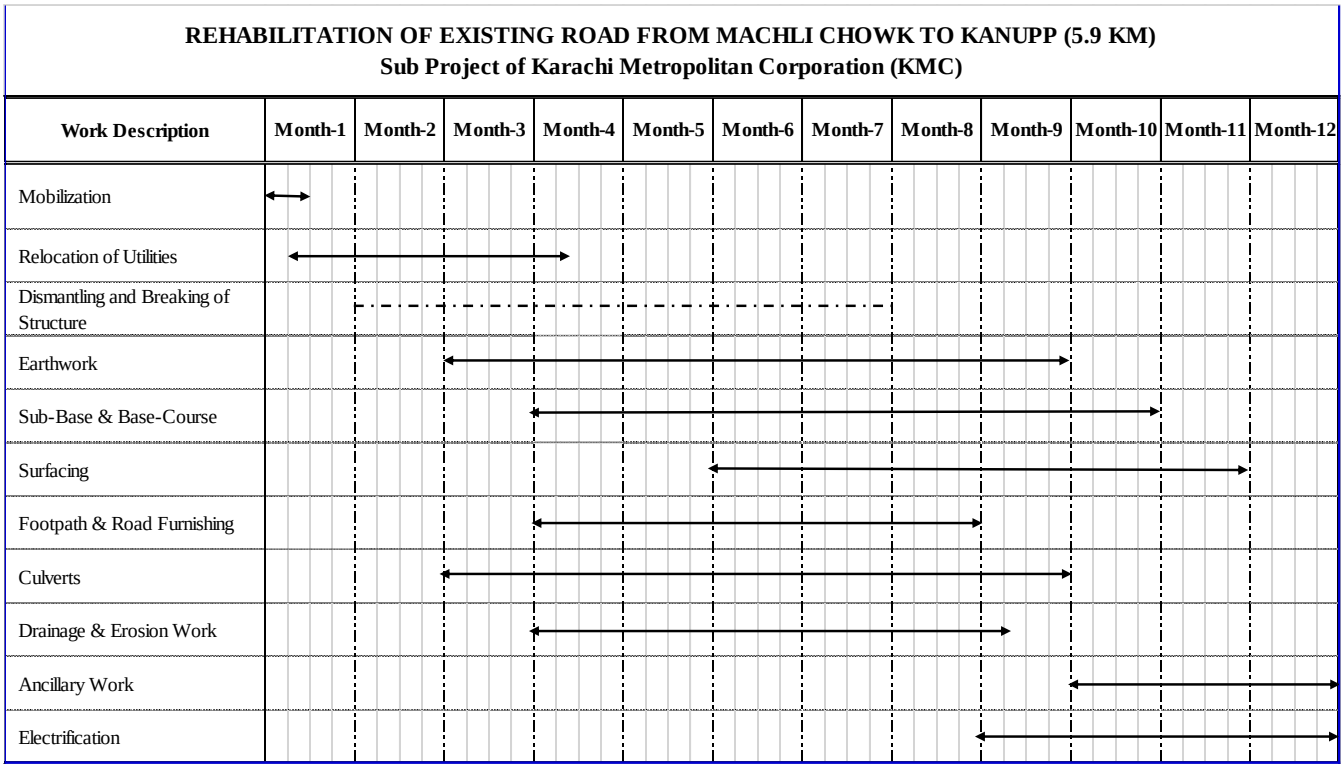
Figure 3-3; Typical Cross Section

3.8.2. Construction Phase

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

- Excavation,
- Breaking of the existing pavement structure
- Filling
- Road pavement –structure
- Granular sub base
- Aggregate base
- Asphalt Concrete
- RCC box Culvert
- Drain
- Reinforcement
- Concrete
- Installation of street lights,
- Electrification
- Pavement marking
- Traffic sign
- Footpaths
- New Jersey Barrier (NJB)

Standard and environmentally friendly construction materials and practices will be employed. Typical cross-section and layout plan for better understating of design, Figure 3.2 and Figure 3.3 respectively for better understating of design.



3.8.3. Operation and Maintenance Phase

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

Recommendation for operation and maintenance: CLICK does not support operation and maintenance of the proposed sub-project. However, KMC is requested 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
• Daily removal of dirt and substances • Periodically check the condition of Road, Lights, Culverts, Signages, storm water drain and electric Poles Regularly • Repair the damage items immediately • Ensure proper Solid & Liquid Waste management at site. • Ensure proper upkeep of planted trees and road furniture including signage along the road side.	Dedicated staff member of KMC Staff	Visual inspection	As per the KMC existing SOPs/Monitoring regime	Focal Person of KMC and dedicated staff

Chapter 4. APPLICABLE LAWS

4.1. National and Provincial Requirements

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

4.1.1. National Policies and Laws

- National Water Policy 2009
- Climate Change Policy of Pakistan 2012
- Pakistan Climate Change Act 2016
- Pakistan Penal Code
- The Antiquities Act, 1975

4.1.2. Provincial Policies and Laws

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

4.2. Applicable World Bank Requirements

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

Table 4-1: Safeguard Policies Triggered and Compliance Status

#	Environmental Assessment	Policy Reference	Triggered	Remarks
1.	Environmental Assessment	OP/BP 4.01	✓	CLICK is categorized as category B with partial assessment. The sub-project has been screened as per OP 4.01 and is envisaged to have low to minor environmental and social impacts. The sub-project involves only rehabilitation activities of the existing 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 L).
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 KMC 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, socioeconomic 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 from Machli Chowk to KANUPP (5.9 km) is presented hereunder:

5.1. Physical Environment

This section gives the detailed description about the physical environmental condition of sub-project area, district of Keamari, 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.

5.1.1. Climate:

Karachi is located just above the tropical zone i.e. 24° North. It is situated along the coast of Arabian Sea. Both these factors influence the climate of Karachi. It can be characterized by dry, hot and humid condition. There is minor seasonal intervention of a mild winter from mid-December to mid-February into a long hot and humid summer extending from April to September, with monsoon rains from July to mid-September.[4]
The climate of sub-project location can be characterized by dry, hot and humid conditions.
As the only meteorological station of Pakistan Meteorological Department (PMD) in Karachi is located at Jinnah International Airport which measures the overall Karachi climate data, therefore this station is taken as the main source to present the meteorology of the sub-project area.

5.1.2. Temperature:

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

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

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

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

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

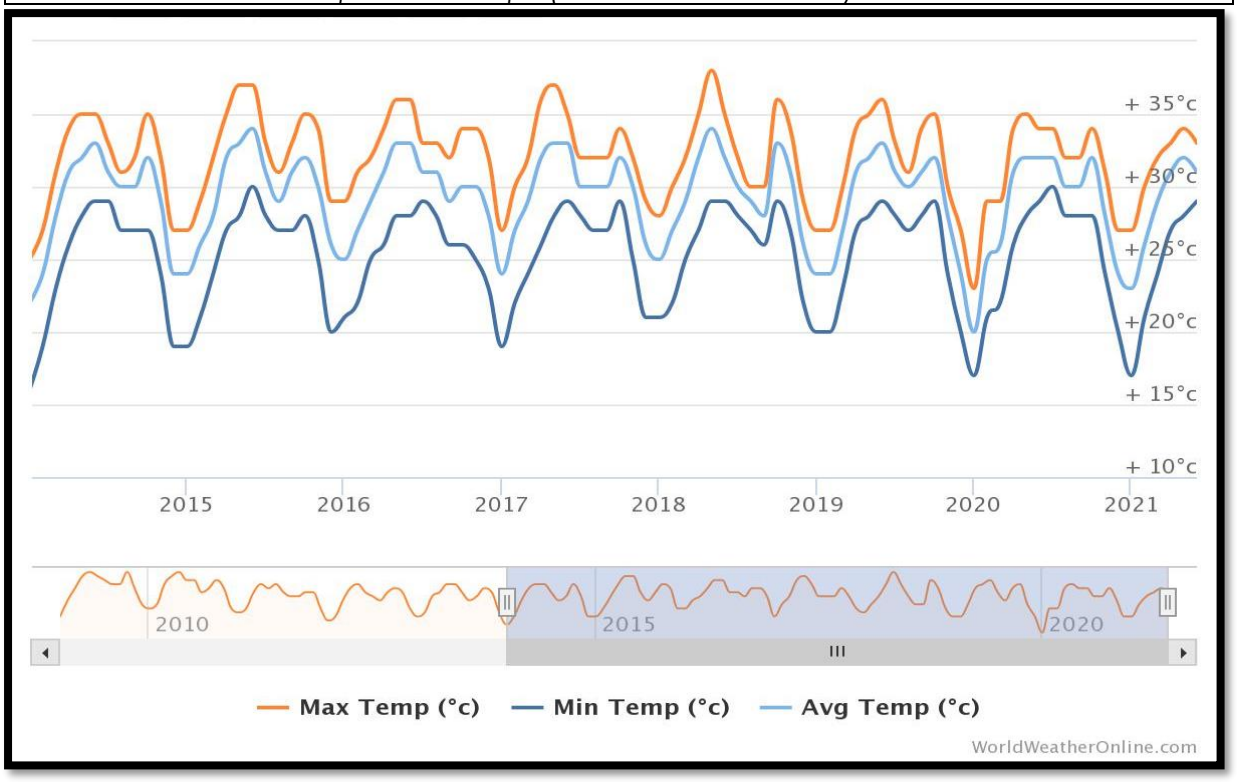


Figure 5-1: Maximum, Minimum and Average Temperature (Keamari-Karachi)

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

5.1.3. Precipitation

Rainfall data for Karachi was collected from Pakistan Meteorological Department (PMD). The annual maximum daily rainfall data was collected for 58 year from 1962 to 2020. Further, daily data was processed and represent in graphical form in figure 5.2 which shows more than 200 mm maximum daily rainfall was recorded in the year 1976 and last year 2020.
It is pertinent to highlight rainfall data in the case this subproject, because the area in general received highest amount of rainfall in 2020. Also, a causality was reported in subproject nearby area, 'Hawksbay'[5].

[5] https://www.dawn.com/news/1576798

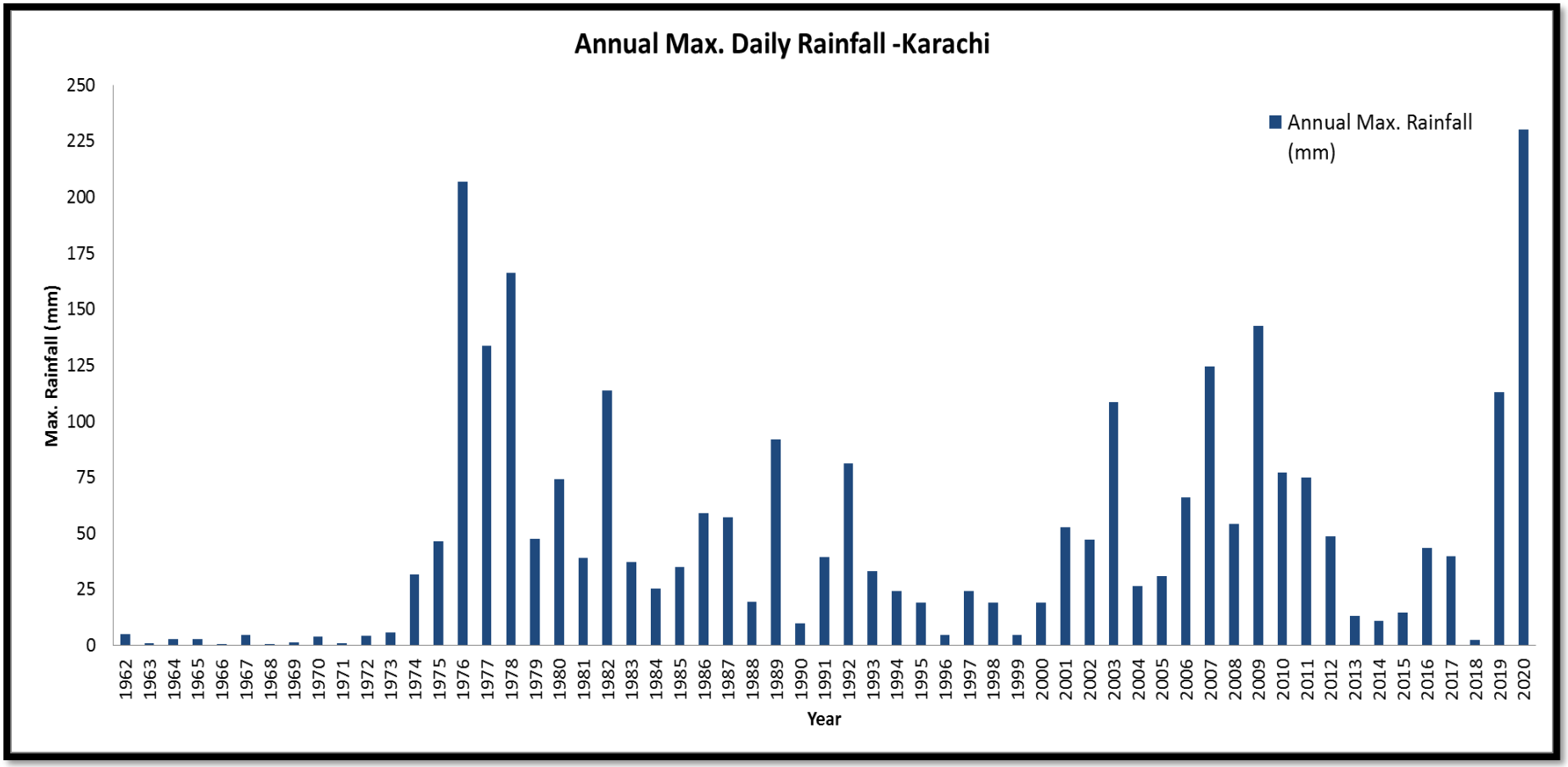


Figure 5-2: Annual Max. Daily Rainfall Karachi from 1962 to 2020

In the month of August 2019 and 2020 highest rainfall was recorded in Keamari, Karachi. **Table 5.2** and **Figure 5-3** show the average monthly rainfall data of Keamari, Karachi.

Table 5-2: Average Rainfall of Keamari, Karachi

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

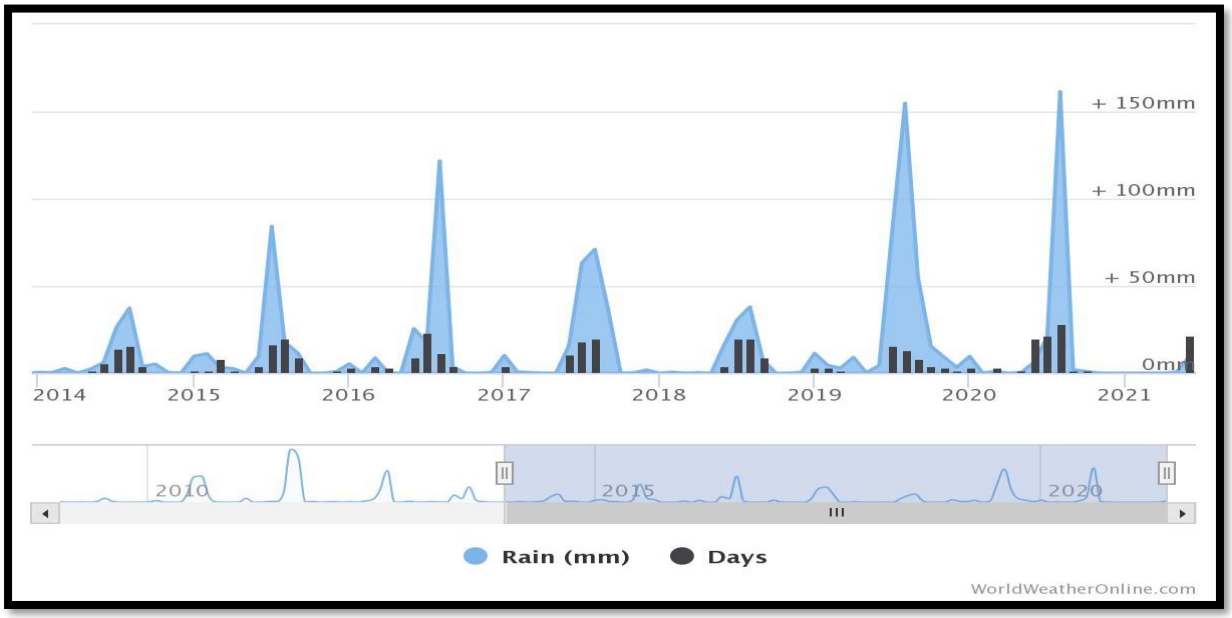


Figure 5-3: Monthly Average Rainfall (mm) of Keamari, Karachi

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

5.1.4. Wind Data

On average, the wind speed in Karachi varies seasonally throughout the year. Karachi's wind is mostly pleasant because of the influence from the sea. The most amount of wind is experienced from April to September. The wind is relatively higher near the project area as that is closer to the beach, so it has a higher influence because of 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. Tropical cyclones are formed in the Arabian Sea in the pre-monsoon season, mostly in the month of June.

Table 5-4 and **Figure 5-5** show the maximum and average monthly wind speed of Keamari, Karachi. **Figure 5-6** shows the wind rose for Karachi.

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

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

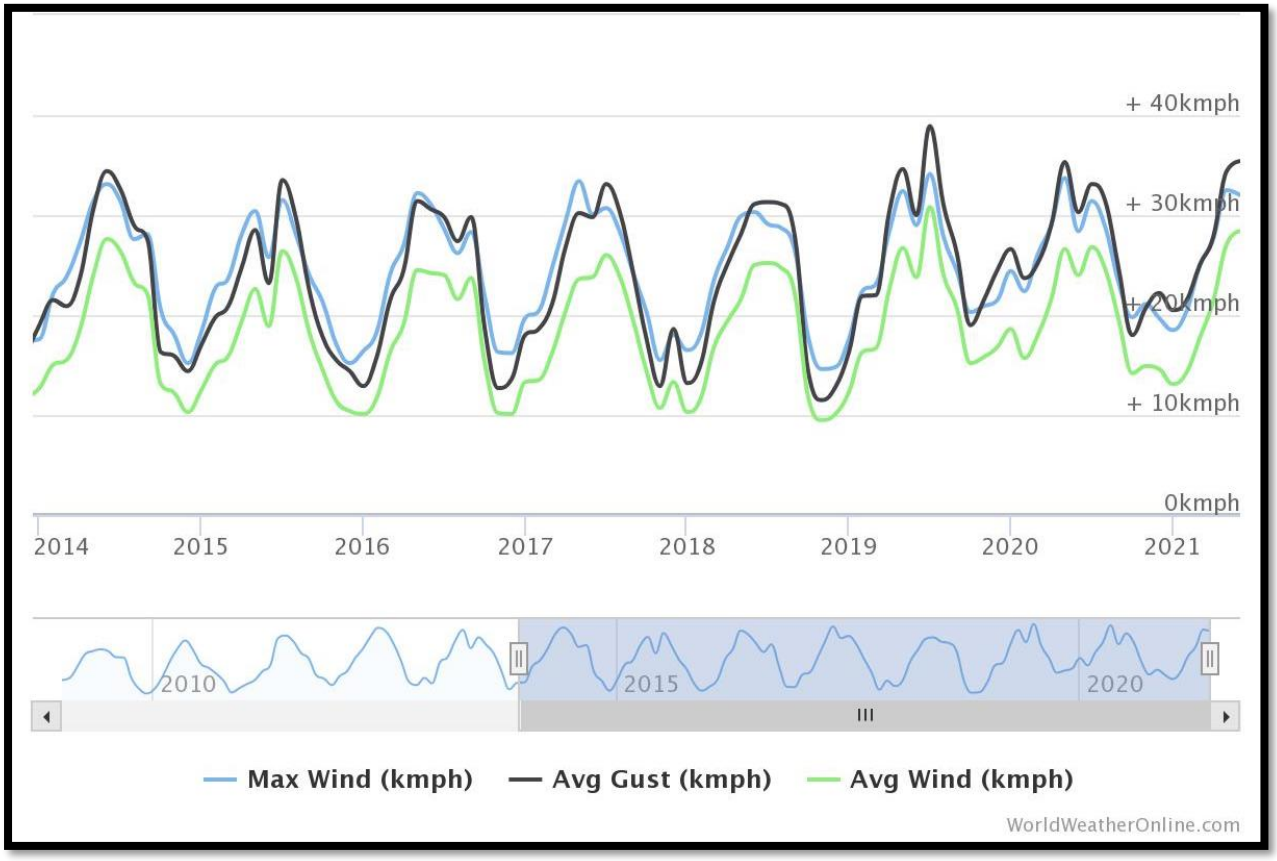


Figure 5-4: Monthly Average and Maximum Wind Speed of Keamari, Karachi

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

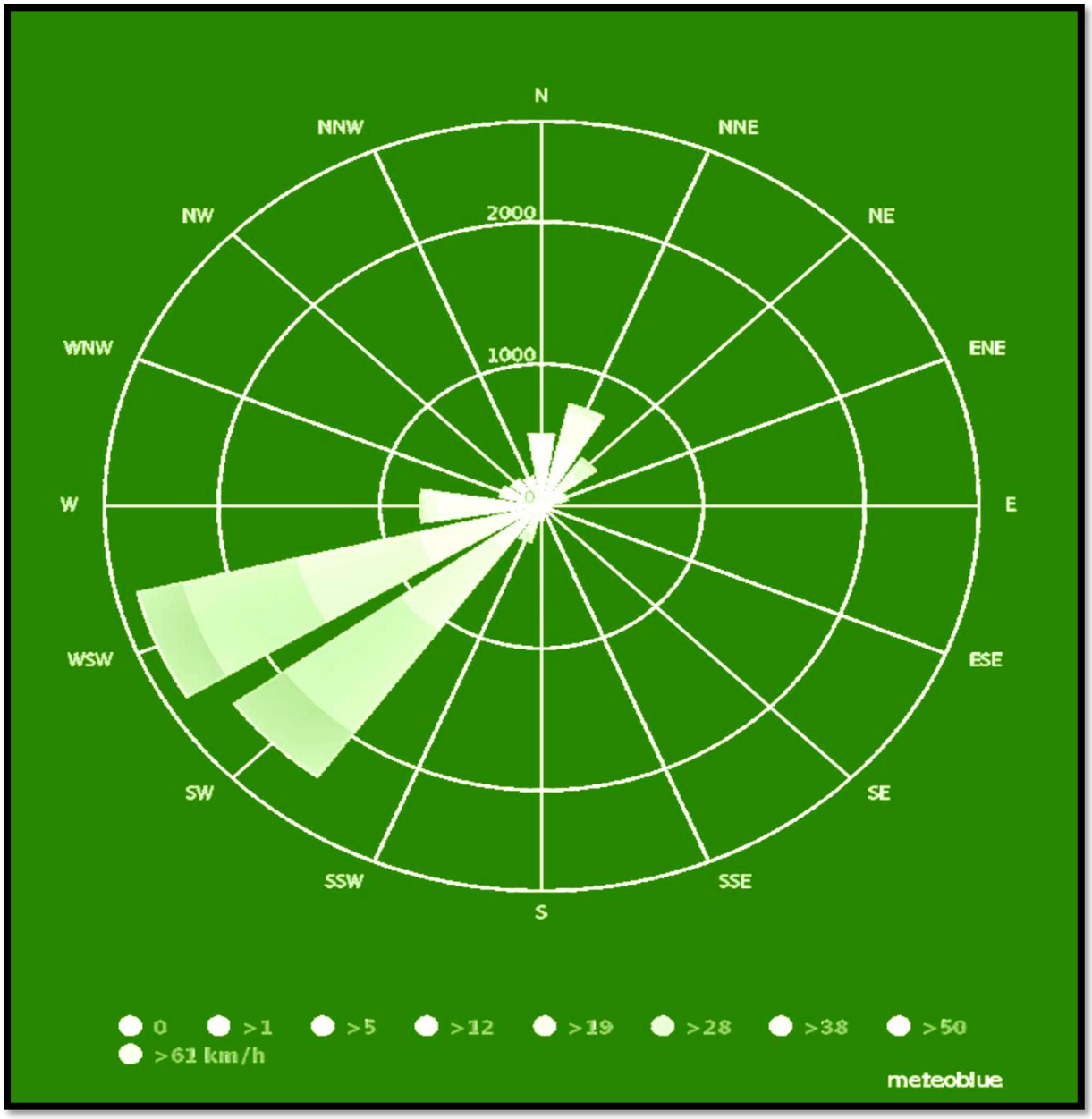


Figure 5-5: Wind Rose of Karachi

Source: Pakistan Meteorological Department

5.1.5. Air Quality

The Air Quality Index (AQI) scale ranges from 0 to 250, where a value towards the higher end of the scale can result in health concerns for the public.
World Health Organization (WHO) has ranked Karachi's AQI as 141-Unhealthy.[6]. Annual mean concentrations of PM_{10} and $PM_{2.5}$ in Karachi are 273 µg/m^3 and 117 µg/m^3, respectively[7]. WHO revised standard for safe concentration levels for PM_{10} is 20 µg/m^3 and for $PM_{2.5}$ is 10 µg/m^3. In

[6] https://cerb.pbc.org.pk/air-quality-health-and-industry/
[7] WHO, "Public Health, Environmental and Social Determinants of Health: Ambient (Outdoor) Air Pollution in Cities Database 2014".

Karachi, PM_{10} concentration level is about 14 times and $PM_{2.5}$ concentration level is about 12 times higher than the WHO standards. Highest level of $PM_{2.5}$ concentration happens during November to February due to reduced wind speed. During this period, PM2.5 concentrations reach in the range of 120–180 µg/m3 (12-18 times the WHO standards).
[8] In Karachi, the concentration levels of carbon monoxide (CO), oxides of nitrogen (NOx), and sulfur dioxide (SO2) are within the permissible limits established by US EPA. The concentrations of hydrocarbons (HC) are higher than the permissible limits (0.25-2.8 as compared to 0.24 permissible limits).[9] Higher level of air pollution has resulted in substantial increase in respiratory tract infection. Major contributors towards air pollution in Karachi are vehicular traffic, industry and ambient dust.

Monitoring Results of Ambient Air Quality of Keamari District, Karachi:
The primary objective for utilizing the secondary data of air quality study is to identify the existing ambient air quality of Keamari district, Karachi. This will also be useful for assessing the conformity to the standards of the ambient air quality during the construction and operation of the sub-project from Machli Chowk to KANUPP (5.9km).

Table 5-4: Monitoring Results of Ambient Air Quality of Keamari District, Karachi

Date	Time	SO2 (µg/m^3)	NO (µg/m^3)	NO2 (µg/m^3)	CO (µg/m^3)	O3 (µg/m^3)	PM 10 (µg/m^3)	PM 2.5 (µg/m^3)	SPM (µg/m^3)	Lead (µg/m^3)
11.09.2020	10:00	14.3	15.9	26.1	0.8	14.8	105	49	346	Not Detected
11.09.2020	10:30	15.8	17.4	27.4	0.7	15.3	109	56		
11.09.2020	11:00	16.4	19.2	29.3	0.6	16.6	116	59		
11.09.2020	11:30	13.3	22.1	21.4	0.8	13.3	112	67		
11.09.2020	12:00	14.2	20.9	20.3	0.9	14.2	103	62		
11.09.2020	12:30	12.8	18.7	18.6	1.1	14.7	94	56		
11.09.2020	13:00	11.3	19.4	19.5	1.0	13.3	108	45		
11.09.2020	13:30	10.9	16.5	21.2	0.9	12.8	111	49		
11.09.2020	14:00	13.3	17.3	18.8	1.0	14.4	118	54		
11.09.2020	14:30	15.2	14.8	19.4	1.1	12.8	123	46		
11.09.2020	15:00	15.8	13.2	21.2	0.7	13.6	106	49		
11.09.2020	15:30	12.5	15.2	23.3	0.9	15.2	115	42		
11.09.2020	16:00	11.3	14.7	20.8	0.8	13.3	101	55		
11.09.2020	16:30	10.6	16.2	17.4	0.7	14.4	108	59		
11.09.2020	17:00	9.8	12.8	18.5	0.9	12.9	114	63		
11.09.2020	17:30	11.4	13.3	21.3	1.0	13.3	117	56		
11.09.2020	18:00	10.2	11.2	22.7	1.1	13.8	110	59		
MIN		9.8	11.2	17.4	0.6	12.8	94	42		
MAX		16.4	22.1	29.3	1.1	16.6	123	67		
AVG		12.9	16.4	21.7	0.8	14.1	109.8	54.4		
SEQS		120	40	80	5	130	150	75	500	1.5

- Note: Secondary Data from EIA Report of Installation and Operation of Bio Medical, Municipal and Industrial waste Incinerator Plant, (Hub River Road), District Keamari Town, Karachi, October, 2020
- Source:https://epasindh.gov.pk/downloads/dd%20tech/EIA%20Incinerator%20Hub%20(Final).pdf

[8] *Gurjar Bhola R., "Air Quality in Megacities", The Encyclopedia of Earth", September 2014*
[9] WHO, "Public Health, Environmental and Social Determinants of Health: Ambient (Outdoor) Air Pollution in Cities
Database 2014".

Results of ambient air quality were complying with the SEQS limits of Sindh Environmental Protection Agency. This is concluding that ambient air quality of Keamari district is good. Meanwhile ambient air quality of sub project area from Machli Chowk to KANUPP is generally good due to presence of sea breezes in the corridor.

5.1.6. Noise Condition

The noise conditions are a result of the activities that occur in the project area. The Main Hawksbay road going from Machli Chowk to KANNUP has relatively low noise levels that are attributed mainly due to the relatively low amount of traffic. The nearby population from the informal towns and settlements mainly conduct activities close to the water and the sandy beaches, which result in relatively low noise levels. The traffic volume is generally low on this road, as most transportation occurs either towards the nearby beaches (Hawksbay, French Beach), or towards other workplaces.

Monitoring Results of Ambient Noise Quality of Keamari District, Karachi:

The primary objective for utilizing the secondary data of ambient noise quality study is to identify the existing ambient noise quality of Keamari district, Karachi. This will also be useful for assessing the conformity to the standards of the ambient noise quality during the construction and operation of the proposed sub-project from Machli Chowk to KANUPP (5.9km).

Table 5-5: Monitoring Results of Ambient Noise Quality of Keamari District,

Date	Time	Noise(dB)
11.09.2020	10:00	57.4
11.09.2020	10:30	56.2
11.09.2020	11:00	55.9
11.09.2020	11:30	54.5
11.09.2020	12:00	53.8
11.09.2020	12:30	56.7
11.09.2020	13:00	58.2
11.09.2020	13:30	55.4
11.09.2020	14:00	53.3
11.09.2020	14:30	56.2
11.09.2020	15:00	57.8
11.09.2020	15:30	58.4
11.09.2020	16:00	55.1
11.09.2020	16:30	56.9
11.09.2020	17:00	57.4
11.09.2020	17:30	58.2
11.09.2020	18:00	56.7
MIN		53.3
MAX		58.4
AVG		56.3
SEQS		*75

- Note: Secondary Data from EIA Report of Installation and Operation of Bio Medical, Municipal and Industrial waste Incinerator Plant, (Hub River Road), District Keamari Town, Karachi.
- Source:https://epasindh.gov.pk/downloads/dd%20tech/EIA%20Incinerator%20Hub%20(Final).pdf

Results of ambient noise quality were complying with the SEQS limits of Sindh Environmental Protection Agency. This is concluding that ambient noise quality of Keamari district is good. Meanwhile ambient noise quality of sub project area from Machli Chowk to KANUPP is generally good due to presence of sea breezes in the corridor and minimum anthropogenic activities in the project area.

5.1.7. Water Quality

The primary objective for utilizing the secondary data of ground water quality study is to identify the existing ground water quality of Keamari district, Karachi. This will also be useful for assessing the conformity to the standards of the ground water quality during the construction and operation of the proposed sub-project from Machli Chowk to KANUPP (5.9km).

Table 5-6: Results of Ground Quality of Keamari District, Karachi

S. No.	Parameters	Standards SSDWQ - Limits	Units	Results	Test Method
1	pH value	6.5 – 8.5	-	7.98	USEPA 150.1
2	Odor	Non Objectionable / Acceptable	Physical	Acceptable	Physical
3	Taste	Non Objectionable / Acceptable	Physical	Acceptable	Physical
4	Color	≤ 15	TCU	1.61	APHA-2020 B/C
5	Turbidity	< 5	NTU	0.7	APHA-2130 B
6	Total Dissolved Solids	< 1000	mg/L	16540*	Hach 8160
7	Total Hardness as $CaCO_3$	< 500	mg/L	6400*	EDTA Titration.Hach-8213
8	Fluoride (as F^-)	≤ 1.5	mg/L	1.74*	USEPA 340.1
9	Chloride (as Cl^-)	< 250	mg/L	7630*	Hach 8206
10	Nitrate (NO_3)	≤ 50	mg/L	54*	Hach -8039
11	Nitrite (NO_2)	≤ 3	mg/L	0.52	Hach - 8153
12	Cyanide(as CN-	≤ 0.05	mg/L	0.002	Hach 8027
13	Phenolic Compound as (Phenols)	-	mg/L	BDL	USEPA-420.1
14	Arsenic	≤ 0.05	mg/L	0.0835*	APHA-3120 B

S. No.	Parameters	Standards SSDWQ - Limits	Units	Results	Test Method
15	Cadmium	0.01	mg/L	0.0088	ASTM D-3557
16	Chromium , Total	≤ 0.05	mg/L	0.0423	ASTM D-1687
17	Copper	2	mg/L	9.0*	Hach 8506
18	Mercury	≤ 0.001	mg/L	0.0516*	ASTM D-3223
19	Selenium	0.01	mg/L	<0.0001	ASTM D-3859
20	Nickel	≤ 0.02	mg/L	0.016	ASTM D-1886
21	Zinc	5.0	mg/L	1.26	USEPA 3500 Zn B
22	Manganese	≤ 0.5	mg/L	18.4*	Hach 8034
23	Barium	0.7	mg/L	05*	Hach 8014

- Note: Secondary Data from EIA Report of Installation and Operation of Bio Medical, Municipal and Industrial waste Incinerator Plant, (Hub River Road), District Keamari Town, Karachi.
- Source:https://epasindh.gov.pk/downloads/dd%20tech/EIA%20Incinerator%20Hub%20(Fi

Results of ground water quality are showing that concentrations of TDS, Total Hardness as CaCO3, Fluoride, Chloride, Nitrate, Arsenic, Copper, Mercury, Manganse and Barium are exceeding their respective limits of Sindh Standard for Drinking Water Quality (SSDWQ). Therefore, ground water is not fit for the human consumption without the treatment.

5.1.8. Topography

Karachi is located in the south of Sindh, along the coast of the Arabian Sea.
Classified according to physiographic features, Karachi City District can be divided into three broad categories: Hilly Region (Mountain Highland), Alluvial Plain (Piedmont Plain) and Coastal Areas (Valley Floor).
The Arabian Sea beach lines the southern coastline of Karachi. Dense mangroves and creeks of the Indus delta can be found towards the south east side of the city. Towards the west and the north is Cape Monze, an area marked with projecting sea cliffs and rocky sandstone promontories.

Digital Elevation Model of Sub Project Area:

The digital elevation model (DEM) is generated for the sub-project area to understand the dynamics of the terrain in a pictorial formation as well as in 3-dimensional view. The DEM used for this study is of 30m resolution (30m x 30m) obtained from online source i.e., United States Geological Survey (USGS) as shown in figure 5-7. A DEM with this resolution linearly interpolates the elevations between observed values and skips any variation between the points of observations.

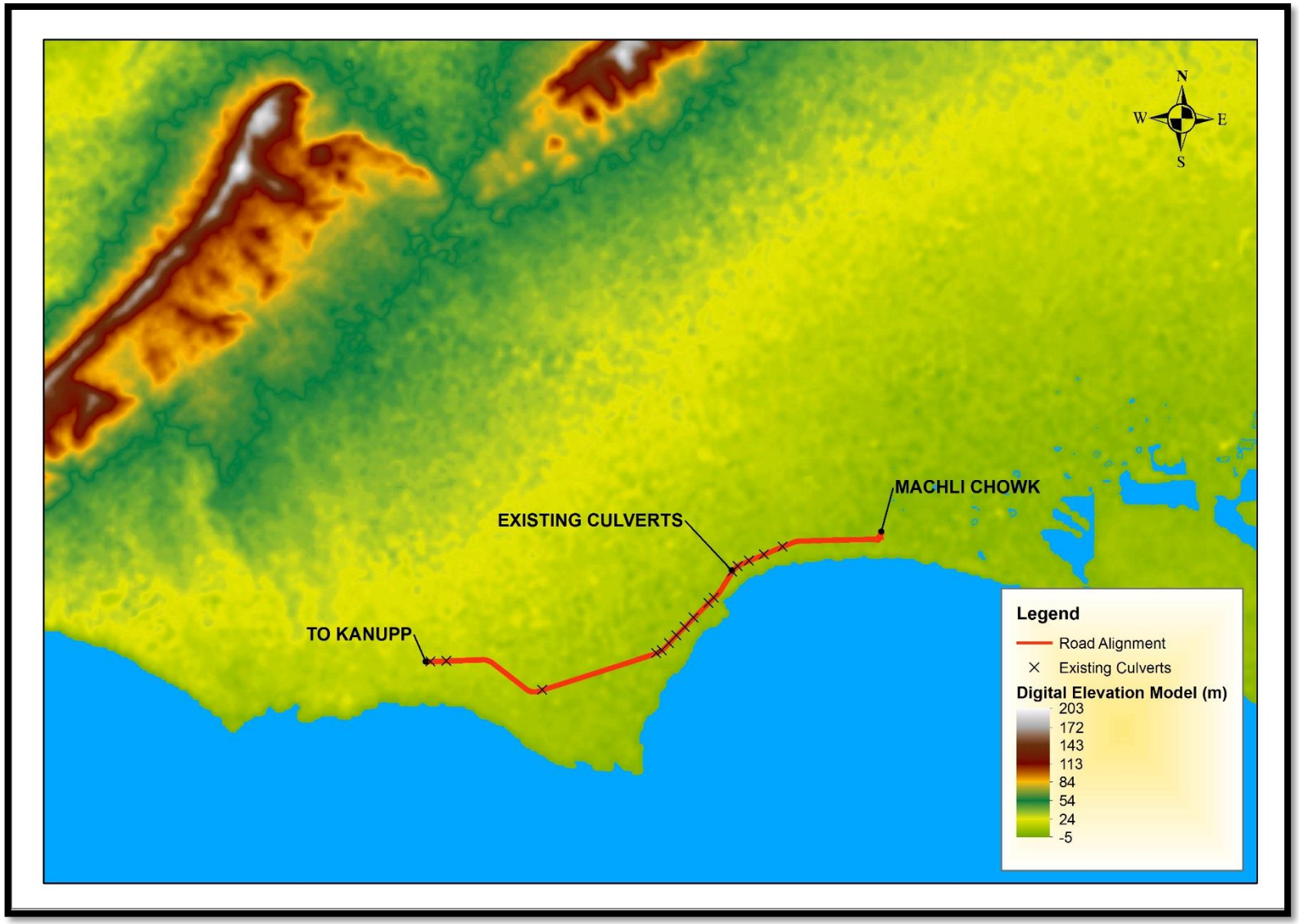


Figure 5-6: Digital Elevation Model of Machli Chowk to KANUPP

5.1.9. Soil and Geology

The soil in Karachi is generally classified in two types, where one is of the loamy sandy and gravelly soils of river valleys and alluvial cones near the coastline, and shallow loamy gravelly soil and rock outcrops plateau. Sub project area is located in the coastal zone of Karachi. Figure 4.1.10 shows the geomorphological zones of Karachi. Soil investigation was performed to get the soil profile of the sub project area. Excavation of 7 Test Pits was performed at the depth of 99 cm on dated 20th May, 2021 at every 1.0 km intervals staggered along the centre line of project corridor.

It was noted that 3 test pits from 7 test pits were not showing the signs of any asphaltic material.

Classification of Embankment Material of Sub project Location:
A total of 5 pits from 7 test pits were showing an embankment directly beneath the Water Bound Macadam. Total of two pits from 7 test pits were showing the boulders below the Water Bound Macadam and then embankment. Three samples showed the A-1-b classification of AASHTO M-145 classification system, which is termed as "Excellent" in embankment. While two samples showed the A-4 classification, which is considered "FAIR" in Soil Classification System. Two samples showed the A-2-4 classification, which is considered as "GOOD" embankment material. It may be noted that 3 pits location from 7 pits locations were showing the no asphaltic layer.

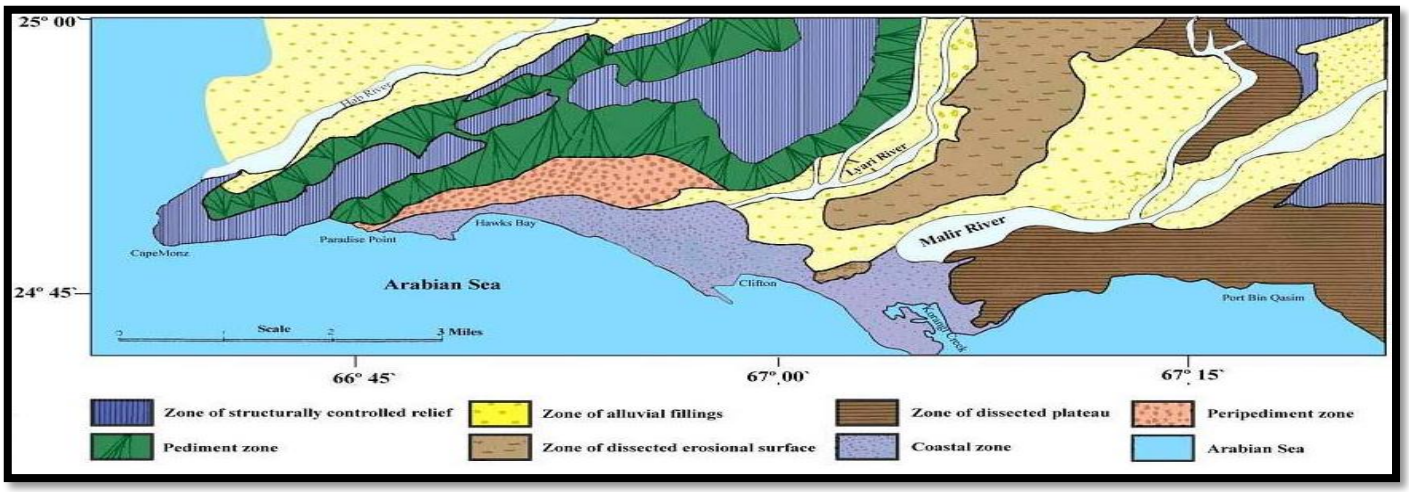
Modified Proctor Test (AASHTO T-180):
Modified Proctor Test was conducted on all 7 soil samples. The maximum dry density varies from 1.92 gm/cc to 2.18 gm/cc. Meanwhile, the Optimum Moisture Content varies from 8.0% to 12.8%.

Field Density Test (AASHTO T-191):
The Field Density Test at embankment samples was showing a value ranging from 92.0% to 96.3% and value of field moisture ranging from 3.9 % to 4.8%.

California Bearing Ratio Test (CBR) (AASHTO T-193-99):

The 7 samples subjected to CBR test, which was showing the filling range of values.

S. No.	Compaction	Range of CBR
1	95%	13.0 to 57.0
2	98%	17.1 to 60.9
3	100%	19.7 to 63.8



5.1.10. Water Resources

The map of water resources and bulk water supply system for Karachi is shown in Figure-5-9 and Fig. 5-10. Water is supplied in the project area only once in every two or three days and for the duration of two to three hours at a time. People are obliged to spend money on ground-level tanks, booster pumps, roof-top storage tanks and water filters and even then, all drinking water is boiled. Many households are compelled to use secondary sources of water such as shallow wells or tanker supplies just to meet their basic needs.

During the public consultation meetings, the local residents complained against the inadequate water supply and the unaffordable cost of water obtained through private tanker service. Meanwhile, KWSB pumping station is present at the project site near the jamali beach restaurant and structure for the storage and supply of water is also present at the sub project location.

Figure 5-7: KWSB Pumping Station and Structure for the Storage and Supply of Water

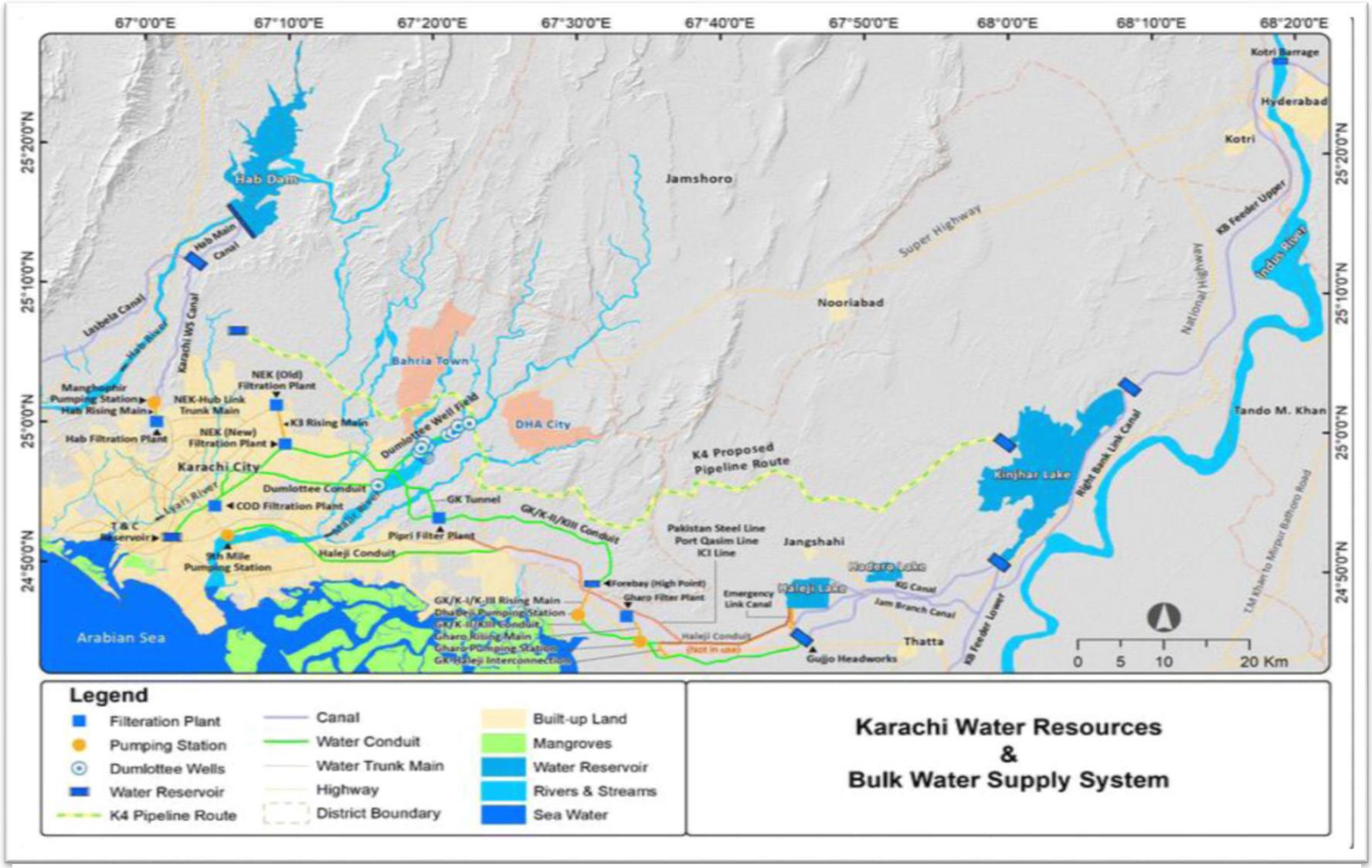


Figure 5-8: Water Resources & Bulk Water Supply System of Karachi

Water is supplied to sub-project location through 18'' inch diameter federal trunk main (FTM) link to KANUPP. The route of Major Water Trunk Mains is shown below in **Figure 4-10.**

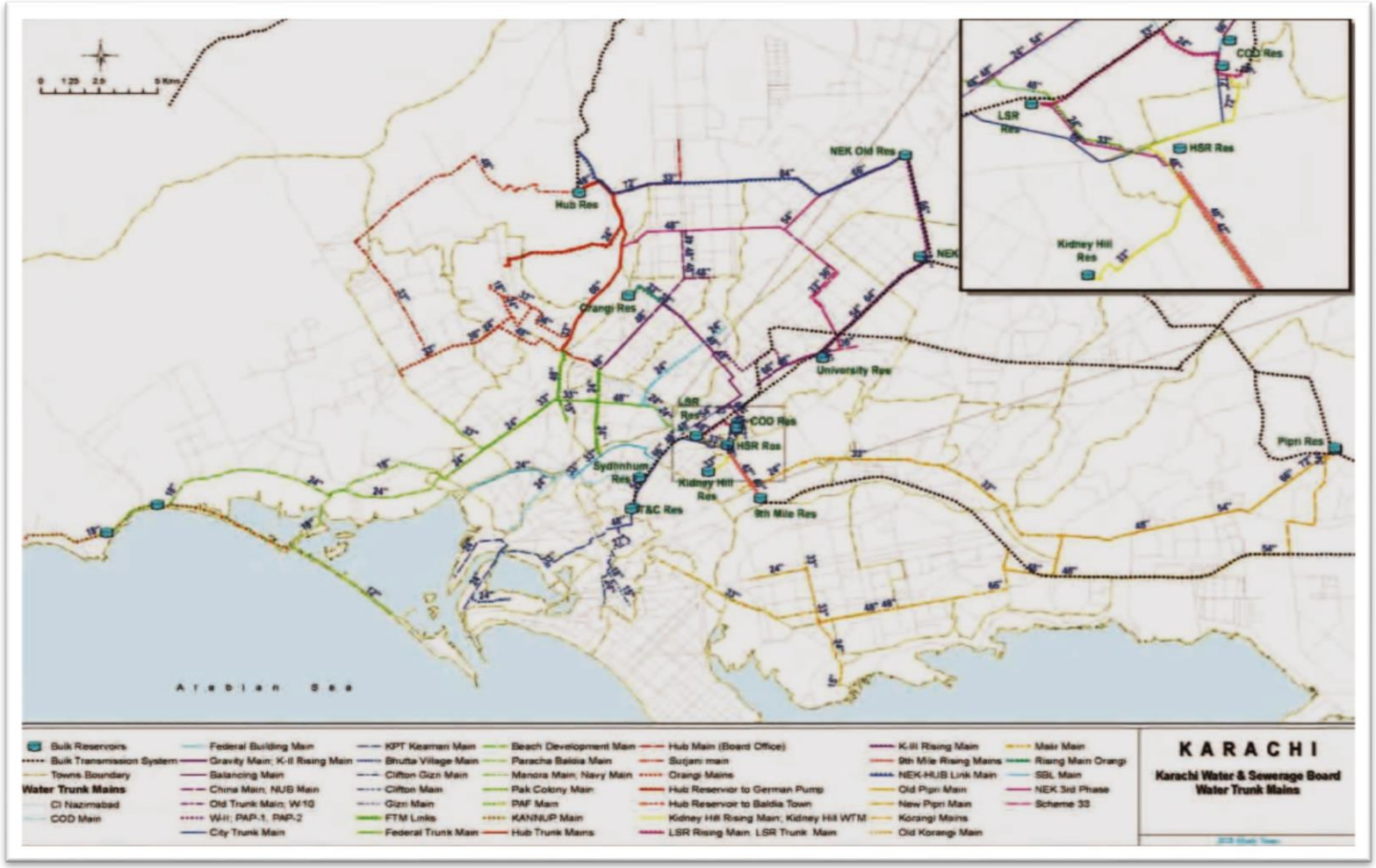


Figure 5-9: Route of Major Water Trunk Mains, Karachi

(Source: JICA Study)

The Sub-project is located in Keamari District which lies in the water supply zone II-A of the Karachi Water & Sewerage Board (KWSB), as shown in figure **5-11** Water distribution pipeline of Keamari is 38.63km.[10]

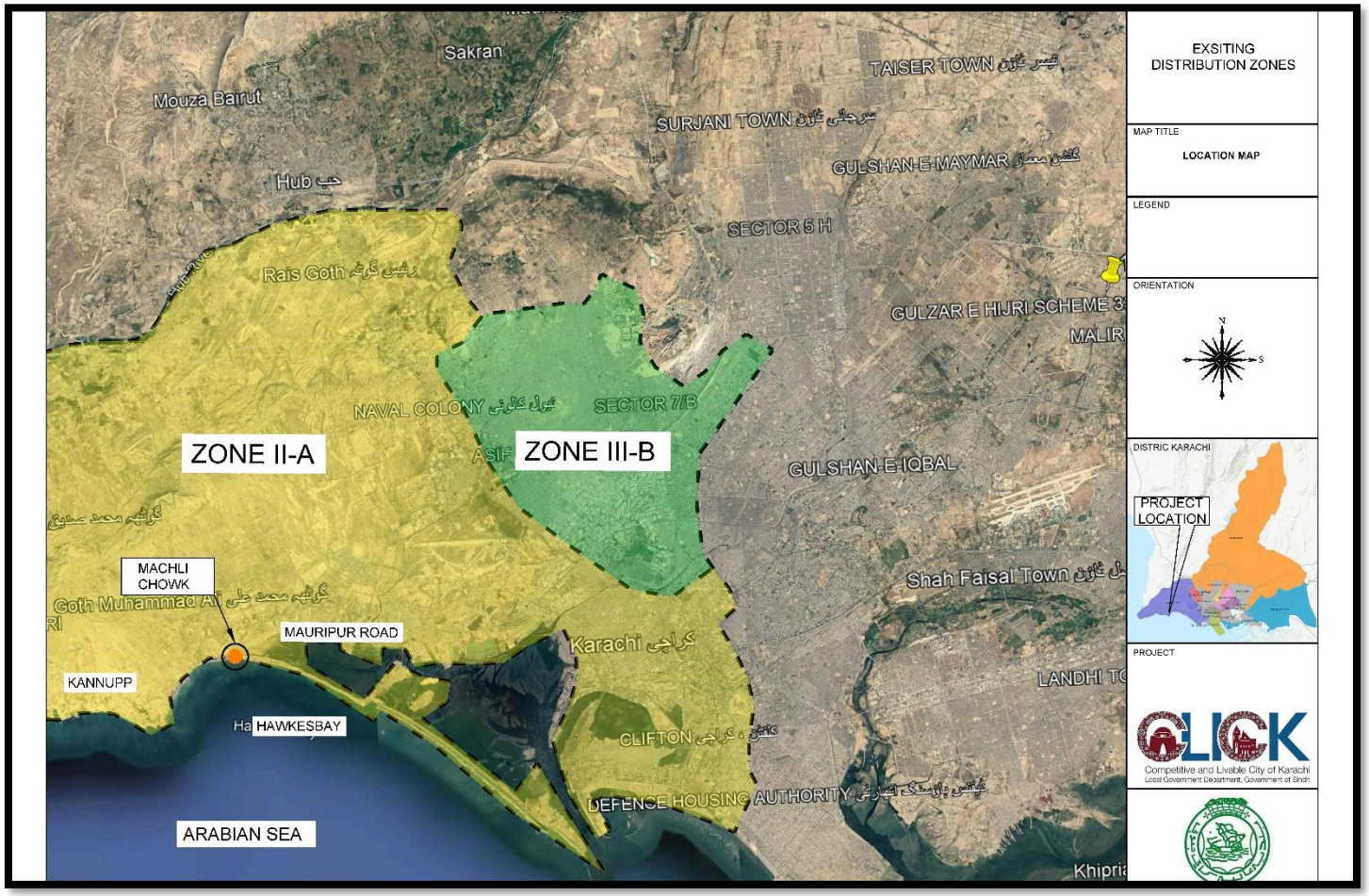


Figure 5-10: Existing Water Supply Zones in Karachi

(Source: JICA Study[11])

[10] Master plan study to formulate a phased development plan of water supply and sewerage system for Karachi up to the year 2025.
[11] https://openjicareport.jica.go.jp/pdf/11888070_02.pdf

5.1.11. Sewerage & Drainage System

There is a limited coverage of sewerage & storm drainage system in the sub-project area. The existing sewerage system has a number of problems. These include inadequate provisions of sewer trunk mains and the malfunctioning of pumping facilities and clogging of waterways caused by damping of massive rubbish, polythene bags in drainage channels.

The drainage and storm water issue along the proposed road side will be addressed under the proposed project. Existing condition of culverts at the sub-project location is showing in the figure 5-12.

Figure 5-11: Existing condition of culverts at the sub-project location

5.1.12. Seismology

Karachi is located in a moderate earthquake zone. Pakistan falls into three seismic zones. Zone-III is the most severe and Zone-I the least. The Karachi Building Control Authority has placed Karachi in Zone-II. Based on the actual events, past observations of fault movement and other geological activities, Karachi is situated in a region where moderate earthquakes may occur of magnitude 5.0 to 6.0 equivalents to intensity between VII and VIII on Modified Mercallis Scale (M).

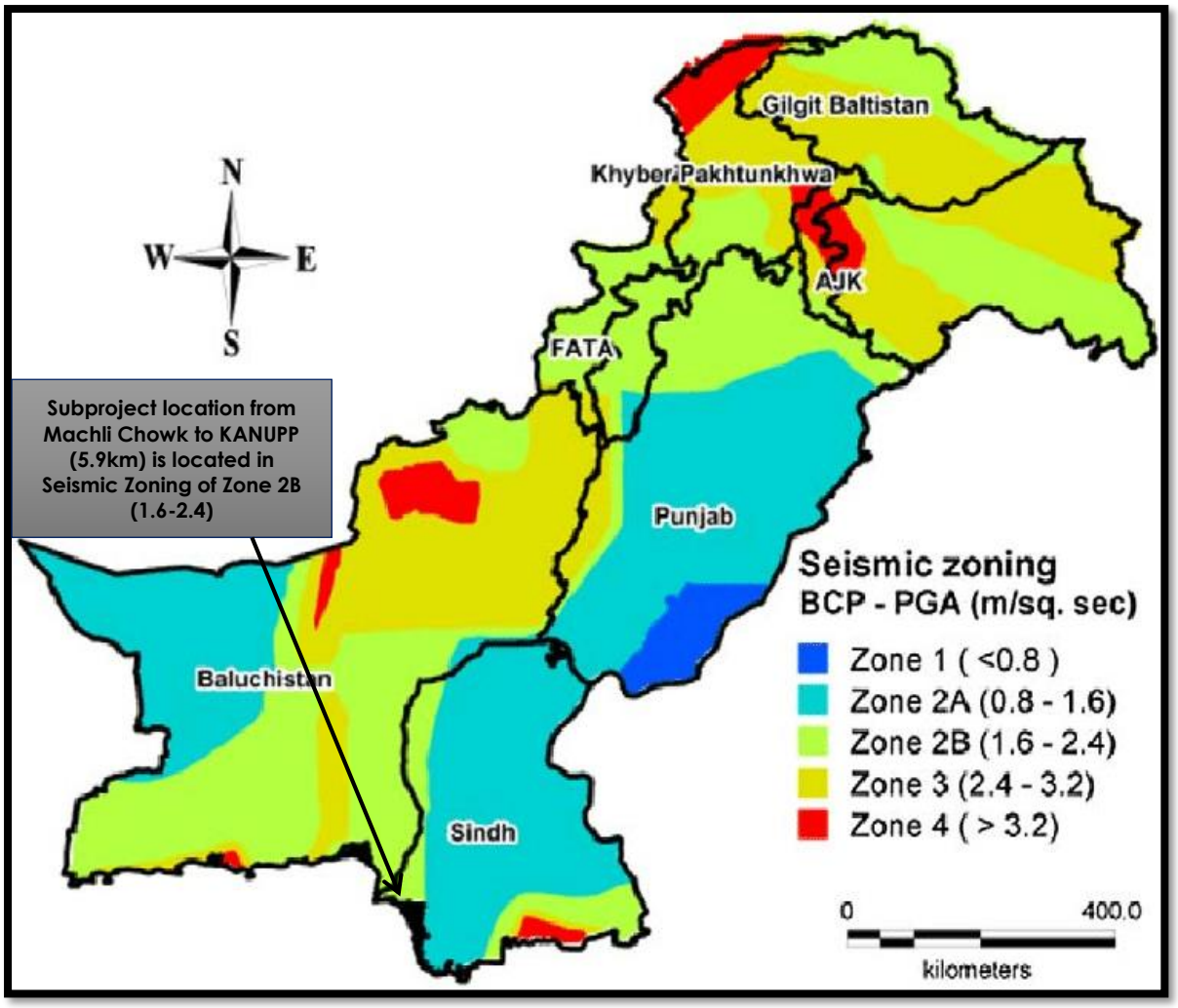


Figure 5-12: Seismic zoning map of Pakistan according to Building Code of Pakistan (BCP 2007)

Sub Project location from Machli Chowk to KANUPP (5.9KM) is located in Zone 2B. 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.

5.1.13. Protected Sites

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 motorists and heavy traffic.

5.2. Ecological Environment

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

Due to high population density in Karachi resulting in higher levels of human settlements and related socio-economic activities including industrial activities, trade and commerce, not many natural habitats exist within the urban area.
The Sub-project area comes under the Indus Delta eco-region, which is also a part of the Sindh coastal region. The overall Sindh coastal region is 350 km long, and can be divided into the Indus Delta/Creek, and the Karachi coast.

Mangrove forest ecosystem of Indus delta is essential life supporting ecosystem providing habitat, shelter and breeding ground for a number of economically important wild fauna and flora. It acts as a barrier for the protection of coastal regions/ports against the disastrous natural phenomenon such as cyclones, winds storms, flooding and soil erosion.
At present, there are four mangroves species found in the Indus delta:

1. Avicennia marina
2. Rhizophora mucronata
3. Aegiceras corniculatum
4. Ceriops tagal

The mangroves are located at a safe distance approximately more than 500m away from the sub project site.

5.2.1. Flora

The main vegetation found around the coastal areas include mangrove forests. These forests are of great value because they act as sources of nutrients for the fisheries. About 99% of the vegetation in this area comprises the species Avicennia marina (the Grey mangrove or Timar). *However, it was observed during site visits that no mangroves were present within half a kilometer of the sub-project area.*

5.2.2.

Surrounding land of the sub-project area is mostly covered with scattered natural vegetation of *Prosopis Juliflora* and *Acacia Nilotica* species. Meanwhile, scattered and a few numbers of species of, Calotropis procera and *Duma florulenta* were observed at project site. Sub-project species of flora are classified according to IUCN Red List, 2021, which is showing in the table 5-8.

Median of road is covered with scattered natural vegetation of *Prosopis Juliflora*, *Acacia nilotica* species and dense planted trees of *Conocarpus erectus*. Meanwhile, median of road is covered with sporadic and scattered species of *Calotropis procera*, *Duma florulenta* and planted trees of *Guaiacum officinale* Meanwhile 3 planted trees of *Phoenix dactylifera* were observed infront of Jamali beach hotel.

Table 5-7: Flora of Sub-project location from Machli Chowk to KANUPP (5.9 km)

S. No.	Biological Name of Plant Species	Local Name of Plant Species	Description	IUCN Red List, 2021
1.	*Phoenix dactylifera*	Date Palm	3 Trees (In front of Jamali Beach Hotel)	LC (Global)
2.	*Acacia Nilotica*	Kikar	Scattered species	LC (Global)

3.	*Conocarpus Erectus*	Buttonwood	Dense Plantation Approximately 289 trees on the median of road *(from chainage 0+000 to chainage5+950).* Approximately 8 trees on right side of road *(from chainage 4+200 to 4+225).* 1 tree on right side of road (at chainage of 3+250).	LC (Global)
4.	*Guaiacum officinale*	Roughbak Lignum vitae (Lignus Tree)	Few species on the median of road	EN (Global)
5.	*Prosopis Juliflora*	Mesquite	Scattered species	NA
6.	*Duma Florulenta*	Lignum bush	Sporadic and scattered species	NA
7.	*Calotropis Procera*	Aak(milk weed)	Sporadic and scattered species	NA
Note: *Flora Species classification as per IUCN Red List 2021 at Geographical Scope (Global).* ***LC:*** *Least Concern* ***EN:*** *Endangered* ***NA:*** *This Specie is not fall into IUCN Red list category.*				

	
Phoenix Dactylifera (Date Palm)	*Guaiacum Officinale* (Roughbak Lignum vitae)

Conocarpus Erectus
(Buttonwood)

Prosopis Juliflora
(Mesquite)

Figure 5-13: Pictorial View of Flora at Sub-project location from Machli Chowk to KANUPP (5.9 km)

Proposed sub-project is for the rehabilitation of existing road from Machli Chowk to KANUPP (5.9KM). In the ROW of the project, there are two to three shrubs (Acacia nilotica and Prosopis juliflora) present on each side of the culvert. In total we have approximately 35-40 Nos of wild shrubs that would need removal for site clearance. These shrubs fall in least concern category of IUCN Red list 2021. However, to improve the landscape of the proposed road, a Tree Plantation Plan has been proposed (refer to Annex G). Under this plan seven different types of plants species and in total 1646 Nos. of plants will be planted. The contractor will be responsible for the implementation of tree plantation plan during the construction phase and KMC to ensure its sustainability.

4.2.3 Fauna

The High and closed seas of Karachi in the northern and western corridors are enriched with large variation of aquatic organisms in the form of large variety of fishes, shrimps, prawns, lobsters, crabs, turtles etc. Sea snakes are also encountered in closed sea sections. Among avian fauna Egret, Seagulls, and White Storks are most common species. Migratory faunal regimes are encountered in winter in closed sea sections or in isolated islands that mainly consisting of Flying Ducks, Pelicans and Flamingos.
During the site visit of sub-project location from Machli Chowk to KANUPP (5.9 km), following faunal species including mammals, reptiles, birds and amphibians were observed at the sub-project location including the following common animals:

- Common Mynah
- House sparrow
- Crow
- Pigeon
- Domestic birds and animals (cow, goat, rooster, duck, cat, dog and donkey)

Table 5-8: 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.	*Bovinae*	Domestic cow	NA
6.	*Capra Hircus*	Domestic goat	NA

7.	*Gallus Gallus*	Domestic rooster	LC (Global)
8.	*Anas Platyrhynchos Domesticus*	Domestic duck	NA
9.	*Felis Catus*	Domestic Stray cat	NA
10.	*Canis Lupus Familiaris*	Domestic Stray dog	NA
11.	*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

Near Hawksbay Road, one can find a variety of reptiles such as snakes, lizards, and turtles. Snakes that are found are cobra (Naja naja) and rattlesnakes (Crotalus horridus). Small, medium, and large sized of lizards are also found commonly in the project area. Since the project area is surrounded by nearby beaches, turtles are also a common sight.

Table 5-9: Reptiles at the Sub-project Site

S. No.	Biological Name of Species	Local Name of Species	IUCN Red List, 2021
1.	*Naja naja*	Asian Cobra snake	DD (Global)
2.	*Crotalus horridus*	Rattle snakes	LC (Global)
3.	*Varanus bengalensis*	Indian Monitor lizard	LC (Global)
Note: *Fauna Species classification as per IUCN Red List 2021 at Geographical Scope (Global).* ***LC:*** *Least Concern* ***DD****: Data deficient*			

Amphibians

A lot of frogs are located in the project area due to the proximity towards the coast and sandy beaches.. The most common frogs found in the project area are the common skittering frogs.

Table 5-10: Amphibians at the Sub-project Site

S. No.	Biological Name of Species	Local Name of Species	IUCN Red List, 2021
1.	*Euphlyctis cyanophlyctis*	Common Skittering Frog	LC (Global)
2.	*Hoplobatrachus tigerinus*	Tiger Frog	LC (Global)
3.	*Sphaerotheca breviceps*	Burrowing Frog	LC (Global)
4.	*Limnonectes limnocharis*	Indian Cricket Frog	NA
5.	*Fejervarya sahyadrensis*	Southern Cricket Frog	NA
6.	*Bufo stomaticus*	Indian Valley Toad	LC (Global)
7.	*Bufo melanostictus*	Common Asian Toad	LC (Global)
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.*			

Table 5-11; Pictorial View of Fauna at the Sub-project Site

	
Corvus Splendens (House Crow)	Capra Hircus (Domestic goat)
	
Equus Asinus (Domestic donkey)	Canis Lupus Familiaris (Domestic Stray dog)

Aquatic organisms in the form of large variety of fishes, shrimps, prawns and crabs were observed at the French beach side, which is approximately 500 m away from the sub project location.

5.3. Social Economic Overview

The socio-economic profile of the subproject area is a comprehensive review of the socio-economic conditions of the project area starting from Machli Chowk towards KANUPP. 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.

5.3.1. Socio-Economic features

The residents of the Machli chowk to KNUPP road falls under the lower income category, mostly are engaged with fishing occupation, however due to tourist spot some commercial activities can be observed, which includes hoteling, restaurants, general stores, vegetable & fruit shops. During consultation many community members were concerned due to lack of good school for their children. They also complained about the unavailability of water supply, sewerage system, health and transport facilities.

Most of the women in the area are housewives. One of the main concern of women in the area was that they have no transport facility for daily routine work. The women also raised concerns that they are facing long hours of load shedding at night. They are overworked and have to stay up late at night to get water. The large volume of autos on the road and absence of traffic signals makes it very difficult for women to commute. There are also no street lights which makes the women feel unsafe travelling during night time. Women residents also do not have many opportunities to work from home.

5.3.2. Demographic Characteristics'

Karachi is one of the most populous cities in Pakistan, having a population of 16.1 million as recorded in 2020. The project lies in the sub-urban area of Karachi where the local population of Hawksbay Town resides and the route is also in use of the heavy traffic coming from KANNUP to Machli Chowk. The impact of the project will be of high value even though the area is not densely populated. Furthermore, the area facilitates a large number of tourists as well.

5.3.3. Population

As per discussion with local community, there are 14 villages as listed below, in close proximity of subproject area, these villages have a total population approx. 10,000 to 20,000 and mostly they are engaged fishing profession.

The following villages are located in close proximity of Mauripur road from Machli Chowk to KANUPP

1. Safar Village
2. Arab village
3. Haji Ali Jaffar Village
4. Abdul Rehman Village
5. Soomar Village
6. Ismail Mubarak Village
7. Ramzan Village
8. Haji Ahmed Village
9. Lashkari Village
10. Umarabad Village
11. Fakeer Muhammad Village
12. Sanghoo Village
13. Mohib Ali village
14. Haji Muhammad Ali Village

Table 5-12: Population Characteristics of Mauripur Districts and Subdivisions (2017)

Admin - Unit		Area (Sq. Km.)	POPULATION - 2017								
			All Sexes	Male	Female	Transgender	Sex Ratio	Population Density Per Sq. Km.	Urban Proportion	Average Household Size	1998-2017 Average Annual Growth Rate (%)
Mauripur Sub-Division		**450**	**192,565**	**102,172**	**90,377**	**16**	**113.05**	**427.92**	**36.67**	**6.04**	**5.16**
	Rural		**121,954**	**64,142**	**57,799**	**13**	**110.97**			**5.86**	**6.31**
	Urban		**70,611**	**38,030**	**32,578**	**3**	**116.74**			**6.39**	**3.62**

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

5.3.4. Ethnic, religious and Linguistic Diversity

The residents of sub project area are mostly low-income Sindhi & Balochi and religiously are Muslim.

5.3.5. Health

There is a severe shortage of health facilities in the area not even basic health unit. Only private clinics are there for local, mostly residents go to city for treatment. Malaria, typhoid and skin diseases are the most common health problems of the area.

5.3.6. Education

Three major schools are present in the subproject area, two owned by Government and one by The Citizens Foundation (TCF). The main concern regarding education is the lack of awareness amongst the residents. Even though the school fee is low, parents are reluctant to send their children to school. Due to the non-availability of transport services many families do not send their girls for higher education. The TCF School has initiated an adult literacy program to instill the importance of education amongst the parents, but the response has been very poor.

5.3.7. Housing

Majority of the houses are made of cemented blocks in the subproject area. However, there is lack of basic utilities which include gas, water supply and sewerage system.

5.3.8. Recreational facilities

The recreational facilities are very limited in the subproject area such as Parks, Playgrounds in spite of being a tourist point.

5.3.9. Employment

Majority of the employment in the area comes through fishing activities, especially in Hawksbay Town and in the various neighborhoods in Keamari. Majority of the locals are engaged in fishing activities due to the proximity of the beach, where they use this employment activity as a major source of income.
Other employment in the area comes from residents running and managing shops, small hotels, and working at privately-owned beach huts. Along the project route one can find a number of small stores and locally-owned hotels.

5.3.10. Public transport

Limited public transport in the vicinity has been observed in the sub project site. Residents travel in the private rikshaw for their routine work. In this regard community complained about the lack of public transport and they had hardship to travel for city. Many residents informed that due to non availability of public transport some residents have migrated from sub project area. One of the main concern of area residents, particularly women was that they have to rent a rikshaw, which they can't afford on daily basis.

There is no enforcement of traffic laws in the area and people often take the wrong way due to the condition of roads. The frequency of accidents is high because of poor traffic system. The lanes are narrow and congested making it very difficult for ambulances to pass and they have faced difficulties during funerals. There are potholes on the road and a few accidents have occurred due to open manholes. There are no road crossings located along the subproject road and there are no crossing facilities for vulnerable groups like the elderly and disabled.

5.3.11. Road Transportation and Traffic Conditions

A traffic survey was conducted by engineers to understand the road traffic conditions, so that the new road design could accommodate for the existing traffic plus any more traffic that the road may experience. This data was collected by conducting site visits, field observations, video cameras, and data loggers. The types of vehicles that were seen on the road include motorcycles, cars, rickshaws, trucks, trailer vehicles, buses, and tractor trailers. Classified traffic volume counts show that around 5000 vehicles ply on the road per day as shown in the following table:

TRAFFIC SURVEY											
FOR IMPROVEMENT OF ROAD FROM MACHLI CHOWK TO KANUPP											
UNDER COMPETITIVE AND LIVABLE CITY OF KARACHI (CLICK) PROJECT											
LOCAL GOVT.DEPARTMENT,GOVT.OF SINDH											
SUMMARY OF TRAFFIC VOLUME COUNT											
Date: April 06, 2021											
Day: Tuesday											
Direction	**Motorcycle**	**Rackshaws/Qingqi**	**Cars / Jeeps / Suzuki Vans / Pickups**	**Wagon/ Minisbus/ Coaches/ Coaster/ Mini Truck**	**Buses**	**Trucks / Tankers 2-Axle**	**Trucks / Tankers 3-Axle**	**Trcuk & Trailer**	**Bicylce**	**Animal Carts**	**Total**
KANUPP to Mubarak Village	488	57	76	10	0	22	19	2	15	15	704
Mubarak Village to KANUPP	448	45	67	3	0	40	10	2	9	11	635
Machli Chowk to Mubarak Village	634	65	200	24	2	39	20	2	9	5	1000
Mubarak Village to Machli Chowk	734	88	200	16	3	51	13	4	9	10	1128
Machli Chowk to KANUPP	1234	149	606	225	16	61	42	81	6	13	2433
KANUPP to Machli Chowk	1160	175	663	257	13	33	46	74	4	24	2449
Approach from Machli Chowk	1868	214	806	249	18	100	62	83	15	18	3433
Exit towards	1894	263	863	273	16	84	59	78	13	34	3577

Machli Chowk											
Total 2-way Traffic	**3762**	**477**	**1669**	**522**	**34**	**184**	**121**	**161**	**28**	**52**	**7010**

The Design and Supervising Consultant was advised that depending on the time of the day and season of the year, the traffic levels can generally vary. The roads usually have more traffic when people frequently visit the beach more during the winter and early summer times. Furthermore, a few hours of the day generally have a higher number of vehicles due to the experienced rush hour.

5.4. Affected Structures and Settlements

The structures and settlements in the vicinity will not be affected as their no land acquisition is required, as mentioned earlier the area is not commercialised due to the sensitivity of the KANUPP. Since there is no land acquisition, no shelter or residential land is required to be resettled and agriculture or productive assets that exist in the sub-project area will not be affected. No businesses or enterprises will be affected due to the sub-project construction. There is no infrastructure on the project land area, so the general public will get access to the build-up area. Furthermore, the project area is also not in the use of livelihood or any other source of income.

5.5. Industrial and Commercial Activities

Fishing is one of the most popular employment activities that occurs in the nearby neighbourhoods and towns. Most villages along the project route are engaged in fishing activity.

Along the project route, there is also industrial activity closer to KANNUP, where Karachi's nuclear power plant is located.

5.6. 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; only one grave was observed at the median of road during visit, which will be protected accordingly. 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 24th April 2021with people of the area as part of the environmental and social screening study. Another round of Consultation Meetings was held on June 07, 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 KMC's website/social media and on banners at the project site.

6.1.1. 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.

6.2. 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, whilst the formal Public Consultations to compile the opinions, concerns, and issues of the stakeholders for consideration in the implementation of the Project.

6.3. 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 target audience comprised all segments of the stakeholders including all genders, local community leaders and representatives, labors, shopkeepers, fishermen, school teachers, and other professionals. 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.

6.4. 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 subprojects 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 such as Karachi Nuclear Power Plant (KANUPP), Pakistan Coast Guards (PCG) and Emergency Response Centre (ERC) of the KMC. Primary stakeholders of the proposed sub-project mainly comprise the people living in its close vicinity and in the remotely located villages which have access to the city only through this road as the only main artery along the beach area.

Secondary stakeholders include the relevant government agencies and public interest groups which may indirectly influence or be influenced by the project. Important stakeholders include the utility agencies as K-Electric (KE), Karachi Water and Sewerage Board (KW&SB), Sui Southern Gas Co. Ltd. (SSGC), Pakistan Telecommunication Ltd. (PTCL) and Sindh Environmental Protection Agency (SEPA) whereas the institutional stakeholders including the educational institutions.

6.4.1. Primary Stakeholders' Consultations

Following consultations were conducted with primary stakeholders.

Table 6-1: Consultation sessions

Date	Location	Stakeholder
24th April, 2021	Emergency response center KMC near Machli Chowk	Male Residents were consulted by KMC, PIU and consultant team Attendance is annexed (C)
07th June, 2021	Emergency response center KMC near Machli Chowk	Male Residents were consulted by KMC, PIU and consultant team
07th June, 2021	Govt Boys secondary school Hawksbay	Male & female Residents were consulted by KMC, PIU and consultant team Attendance is annexed (C)
07th June, 2021	Haji Ali Muhammad Goth (community area)	Male Residents were consulted by KMC, PIU and consultant team Attendance is annexed (C)
07th June, 2021	Haji Ali Muhammad Goth at community house	Female Residents were consulted by KMC and PIU CLICK SS.Specialist Attendance is annexed (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 remote areas, and disruption in daily activities, poor roads, inadequate storm water drainage facilities, and wastewater disposal.

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

Table 6-2: Key Community Stakeholder Concerns and Response

S.No.	Stakeholder Feedback	PIU/KMC Response
1	The business community along the project road showed great concern about the road. They claimed that the bad condition of the road has restrained the access of tourists to their resorts 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 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 KMC understands the need of the proposed road.
3	Ex Nazim 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 them. Also, the locals are facing robbery issues and people are not ready to travel at night on this road. In addition, females are also facing various challenges in commuting for teaching, study and maternity services activities.	Social Safeguards Specialist of CLICK responded that the sub-project 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 due to the existing poor condition of culverts along the road, which creates hurdles for the flow of rainwater to Sea.	The Executive Engineer, KMC briefed that road related culverts and storm water drain issues will also be resolved with the development of the proposed sub-project.
5	Community asked whether any demolition would occur due to rehabilitation of the road.	Social Safeguards Specialist PIU- CLICK informed that as per the proposed design, no temporary or permanent

		structure will be demolished during the implementation of the sub-project as the existing road ROW has sufficient space on both sides.
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 devices, markings & signages and other health and safety provision for both traffic and local residents of the community living around the project site to ensure their safety.
7	Female residents' concerns were that there is no maternity/ dispensary and girls' school in the vicinity of subproject area	Noted and it was informed that the subproject is only for the rehabilitation of existing road but KMC personnel ensured that concern will be passed on to the relevant authority.
8	One of the main concerns of area residents, particularly women was that due to none availability of public transport they have to rent a rikshaw, which they can't afford on daily basis and compromise on receiving the higher education and health related issues.	Noted and it was informed that the subproject is only for the rehabilitation of existing road

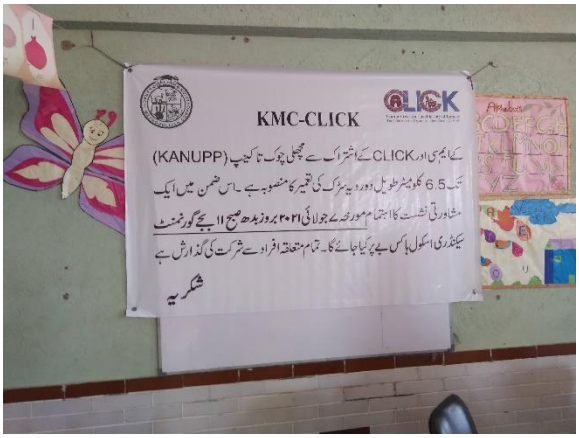
During the consultation process about the proposed sub-project, people expressed keen interest in the proposed sub-project. People, in general, were very enthusiastic about the benefits of the sub-project for the residents and daily commuters in particular. People pledged to extend all types of support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

Community Consultation # 01: Community consultation meeting at Emergency response center (ERC) located at project site.	
	
KMC/LC Environmental Focal Person Briefing about the Project	KMC/LC Social Focal Person Briefing about the Project

	
PIU Environmental Safeguard Specialist Briefing about the Environmental Policies of World Bank	PIU Social Safeguard Specialist Briefing about the Social Policies of the World Bank
	
A View of Consultation Workshop at Sub-project Area	A view of Banner showing workshop details in local language.

Community Consultation meeting at Govt. Secondary School Hawksbay

<table>
<tr><th colspan="2">Community Consultation # 02: Community consultation meeting at Hawksbay Govt. boys secondary school located at project site.</th></tr>
<tr><td> 
</td><td>  </td></tr>
<tr><td>KMC/LC Environmental Focal Person Briefing about the Project at Secondary school hawksbay.</td><td>KMC/LC & Consultant Social Focal Person Briefing about the Project</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>A View of Consulttaion Workshop at Sub-project Area</td><td>PIU Social Safeguard Specialist Briefing about the Social Policies of the World Bank</td></tr>
<tr><td>  </td><td> 
</td></tr>
<tr><td>A View of Consulttaion Workshop at Sub-project Area location “Govt. Secondary School at hawksbay”</td><td>A view of Banner showing workshop details in local language.</td></tr>
</table>

Community Consultation at Abdul Rehman Goth (French Beach).

<table>
<tr><td colspan="2">Community Consultation # 03: Community consultation meeting at Haji Ali Muhammad Goth located at project site.</td></tr>
<tr><td> 
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<tr><td>KMC/LC Environmental Focal Person Briefing about the Project at Secondary school hawksbay.</td><td>KMC/LC & Consultant Social Focal Person Briefing about the Project</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>A View of Consulttaion Workshop at Sub-project Area</td><td>PIU Social Safeguard Specialist Briefing about the Social Policies of the World Bank to community women participansts</td></tr>
<tr><td colspan="2">Community Consultation # 04: Community consultation meeting at Emergency response center (ERC) located at project site.</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>A View of Consulttaion Workshop at Sub-project Area.</td><td>A view of Banner showing workshop details in local language.</td></tr>
</table>

6.4.2. Secondary Stakeholders Consultations

Following consultations were conducted with secondary stakeholders.

Time & Date	Location	Stakeholder
8TH JULY, 2021. 11:30 A.M	Project Implementation Unit (PIU) Office of Click. Karachi	Govt line department, KANUPP and Coast Guard officials Attendance is annexed (C)
13TH AUGUST, 2021, **TIME:** 3:00 P.M.	Sindh Environmental Protection Agency, Karachi	SEPA representatives, PIU and consultant

Following are the details of consultative meetings

Consultative Meeting of Stakeholders "Rehabilitation of Road from Machli Chowk to KANUPP (5.9 Km)"			
DATE & TIME: 08TH JULY, 2021. 11:30 am			
LOCATION: Project Implementation Unit (PIU) Office of Click. Karachi			
OBJECTIVE: Project Brief and Consultative Meeting with Stakeholders			
S.No.	**Stakeholder Designation**	**Stakeholder concerns**	**PIU/KMC Response**
1	Imtiaz Abro (KMC Focal Person)	- Local Populations are located in the catchment areas. Special considerations should be taken placed during designing and up gradation of existing culverts.	- Design consideration and standards were taken into account for the local area road rehabilitation with respect to the serving purpose of local's residents and feel of societal rehabilitation project. Design of culverts along the road surface water drain is also the part of this road rehabilitation.
2	Zafar Palijo Chief Engineer (KWSB)	- This is only road, which is located and connected KANUPP project site to Machli Chowk. - This is very important road, in case of evacuation of local population around KANUPP vicinity during emergency condition and any nuclear disaster event. - This road is unable to use during condition of heavy rain fall and flooding condition. - Current study of hydrology and new contours points will be required to handle the water of	- This single main road is the only connecting road to local's communities living in the vicinity of the area and to KANUPP. - This road and related associated facilities like surface water drain towards the culverts and flow design is incorporated in design for the complete project facilitation. - Topographical survey was carried out before the design of road and other utilities associated with the project. - Design vehicle speed is taken for single unit truck speed considered of 60 – 80 km/hr by AAHSTO policy 2011. - Detail topographical survey

		rain fall and flooding issue in this area. - What is designed speed of this road? - What is traffic load capacity of this road? - Usually 30 tons plus cargo movement was done in the past on this road. - Detailed design and topography survey report with project Right of Way (ROW) should be share with us. - Socio economic survey is very important for this project. It should be carried out. - Proper calculation of culverts should be carried out. - Drawing and design of utilities and infrastructure should be share with us. - Road Sustainability will not be done without rain water, floods and water supply line consideration.	was shared by the stakeholders for their concerns and comments to put their inputs or data into the project details. - Socio economic details respective to project area is being carried out by the KMC focal person to put these details in ESMP report. - All design details was shared by the KMC focal person to share with stakeholders. - Storm water drain and surface flow design consideration are all taken into account for the detail design of this project.
3	Local Community Member	- Local community complaint about the accidental cases via vehicles movement of KANUPP during their shifts' time.	- As per design speed breakers are proposed by the consultant to break the vehicle speed for smooth flow of traffic without acting into any accidental incidents in future after project completion.
4	Farhat Bashir Chief Engineer (KANUPP)	- Time management should be done by KANUPP. - Proper traffic management plan should be developed. - Movements of drivers and vehicles, sub-contractors should be monitored and evaluated on this specific corridor.	- Traffic management plan is added here in Annexure – D. - After completion of project, it is the part of the KMC scope to monitor all traffic details on this road.

6	Captain Raheel Sector Commander (Pak Coast Guard) Ahmed Hasan Assistant Engineer, Transmission Line (K-Electric Pvt. Ltd)	- In the Right of Way (ROW) of Project, check post of coast guard is located. It should be resided according to Right of Way (ROW) of project.	KMC focal person shared the respective road right of way details with coast guard representative to put in consideration for their check coming in ROW of road.

Consultative Meeting of Stakeholders "Rehabilitation of Road from Machli Chowk to KANUPP (5.9 Km)"			
DATE & TIME: 13TH August, 2021, Time: 3:00 pm			
LOCATION: Sindh Environmental Protection Agency, Karachi.			
OBJECTIVE: Presentation Of Environmental And Social Checklist.			
S.No.	**Participants**	**Discussion Points**	**PIU/Consultant Response**
1	**MR. IMRAN SABIR** (SEPA)	- Brief the sub-project location and its length?	- M. Aqib Uddin (Sr. ESS) explained the project nature and criteria under World Bank schemes already set to keep that project for SEPA approval for NOC under the guidelines to flow the checklist.
2	**MR. IMRAN SABIR** (SEPA)	- Is construction work already started for the project?	- Tayyab Shafique (ESS) explained that only topographical survey had been done yet to get the first-hand information of the project needs according to the road rehab works and other associated facilities.
3	**S.M. TAYYAB** (E.A CONSULTANT)	- Brief the environmental and social significance of the project.	- S.M Tayyab responded that, along the other consideration SEPA identified to most consider the environmental part in ESMP report for consultant and contractor to keep in work standards during and after the construction work done.

Figure 6-2: Stakeholder consultation meeting at PIU CLICK office

Consultative meeting with line departments and secondary stakeholders at PIU CLICK office	
	
Consultant Briefing about the Project	KMC/LC & Consultant Social Focal Person Briefing about the Project
	
A View of Consulttaion Workshop with line departments	PIU Social Safeguard Specialist Briefing about the Social Policies of the World Bank to line departments

Presentation of Environmental and Social Checklist for the Click (Competitive and Livable City of Karachi) Sub-Project for KMC, "Rehabilitation of road from machli chowk to kanupp (5.9 km), Karachi".	
	
Consultant Briefing about the Project to SEPA	PIU Sr. Environment Specialist with Consultant Briefing about the Project
	
A View of SEPA presentation for NOC	Consultant Social Safeguard Specialist Briefing about the project to SEPA members

6.5. 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 sub-project will have minor to moderate environmental & social impacts as the project involves rehabilitation activities of the road, and will generate noise, dust and asphalt emissions. However, it will not affect the ecological resources of the sub-project area, only unwanted vegetation and shrubs will be removed during site preparation. Also, it doesn't involve involuntarily resettlement of people, acquisition of private land and demolition/removal of existing structures. The existing road and right of way belongs to the KMC/Government of Sindh.

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 a high volume of 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. One side of the dual carriageway will remain open for traffic movement while work on the other side will be undertaken.

Chapter 7. IMPACTS AND MITIGATION MEASURES

The impacts associated with subproject activities are impacts on 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. Site Health and Safety

- There will be usage of heavy machinery on site, which poses health and safety hazards for the laborers working on site. The following machinery will be used: Crawler Excavator, Motor Grader, Road Roller, Wheel Loader, etc. Construction phase activities could lead to occupational health and safety incidents and accidents. Physical displacement, noise, hot and humid weather conditions, dust and air pollution are amongst the major hazards which could be harmful for labors wellbeing and health. It is important to note that the untrained workers may cause harm to themselves as well as others due to lack of awareness and skills. Also, risks for communicable and vector-borne disease are expected among workers and the surrounding local community due to poor housekeeping practices.
- The World Bank requires that Health and Safety impacts on workers and the community are identified and mitigation measures will be proposed.

Mitigations

- The contractor will ensure that all operators of heavy or dangerous machinery are properly trained/certified, and also insured and the required HSE procedures are duly followed.
- The labor having any transmittable diseases would not be allowed on the construction site.
- The contractor will be required to ensure and strictly implement the SOPs regarding COVID- 19, including daily body temperature check, daily disinfection, quarantine management, area access management, PPEs, emergency response, and drills.
- The Contractor will ensure that the workers are provided with clean drinking water for free, all the time.
- 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 will be ensured by the Contractor.
- The Contractor will observe and maintain standards of Health and Safety towards all employees in line with WB EHS Guidelines along with Sindh Occupational Health and Safety Law.
- Contractor will ensure that hazards associated with manual lifting are controlled by proper lifting techniques and work rotation system to reduce the chances of being exposed to work- related stress associated with construction activities.
- Unauthorized personnel will not be allowed to access the proposed project site without permission and safety permits.
- Workers should be facilitated by providing appropriate work specific PPE's.
- The Contractor will provide training and use of personal fall arrest systems, such as full-body harnesses and energy-absorbing lanyards as well as fall rescue procedures to deal with workers whose fall has been successfully arrested.
- 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.

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 are anticipated as it may involve temporary living at site and the same will be managed according to the governing labor laws and environmental, health and safety (EH&S) regulations.

Mitigation

- 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 hygienic food 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.

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 one carriageway at any time while the other side 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.

Mitigations

- 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.
- Appropriate safety precautions will be taken when transporting large equipment on public roadways.

7.1.4. Damage to Cultural Heritage

- The construction activities will not cause any damage to cultural landmarks or heritage; however, mitigation measures will be proposed to prevent such damage and harm to nearby cultural structures and properties if any.

Mitigations

- The Contractor will not cause any damage or harm to cultural heritage around the project area.
- Pollution such as noise and dust generation will be avoided while working close to religious and ancient sites.
- 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 Issues

The construction of the subprojects will have adverse impacts on public health due to dust, noise, pollution, and migration of construction workers into the subproject. The transportation of heavy machine and equipment to the subproject area may cause additional hazards, accidents and human injuries. It is therefore necessary to generate awareness regarding community health and safety in order to protect local communities from hazards or negative health (including flooding, contamination, disease and other natural or human-made hazards). 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 affected communities during the design, construction, operation, and decommissioning of subprojects.
- Ensure that subprojects 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. KMC will ensure that subprojects 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.
- The emergency preparedness and response activities will be periodically reviewed and revised, as necessary to reflect changing conditions.

7.4.9 Occupational Health & Safety

Occupational health and safety refer to protecting workers from accident, injury or illness associated with exposure to hazards encountered in the workplace. The nature of the construction activity during project implementation involved is of general nature, not requiring any specific measures. However, all the necessary safety measures required during the construction of roads, rehabilitation of drainage and installation of mechanical equipment will be observed and maintained as per the standard procedures and requirements.

Mitigation Measures

- Contractor will ensure that workers are provided with a safe and healthy working environment, taking into account risks inherent to rehabilitation of municipal infrastructure activities and specific classes of hazards in the work areas.
- Where relevant, the contractor will ensure that steps are taken to prevent accidents, injury, and disease arising from, associated with, or occurring during the course of work and will ensure the application of preventive and protective measures consistent with international good practice, as reflected in internationally-recognized standards such as the World Bank General Environmental, Health, and Safety Guidelines.
- 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.

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

- 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 mitigation plan contained in the contract documents or the ESMP with true spirit.

7.2.2. Flora and Fauna

- The sub-project of the rehabilitation of the road has no requirement for tree cutting on or during the project execution. However, small scale and foreign herbs and shrubs will be removed. Moreover, the endangered tree species present on the median will be saved and protected and will not be allowed to cut.

Mitigation

- The contractor will avoid cutting any tree present in the project area, and will ensure protection of the trees present on the median of the existing road by providing the wire mesh over / around the trees.
- 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.

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

- 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 the 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. Air Pollution

- 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

- 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.

7.2.5. Generation of Asphalt Emissions

- Relative 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 brought from the outside therefore, there will be negligible fugitive emissions

Mitigation

- 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.

7.2.6. Generation of Construction Debris

- Due to the civil works undertaken for the road rehabilitation, construction debris that will be generated for which proper disposal at designated locations will be required by the Contractor in consultation with the KMC staff.

Mitigation

- 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 Commuters.

7.2.7. Generation of Hazardous Solid Waste

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

Mitigation

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

- 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 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.
- 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 off 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.

7.2.8. Impact on Surrounding Water Bodies

- The construction activities will take place near wastewater 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

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

7.2.9. Disturbance to Biodiversity

- The proposed construction activities will not cause any harm to the biodiversity of the area, however, minimal impacts to the species that reside in the project's radius are anticipated. Furthermore, 1646 native plant species will be planted along the project route to improve the local ecosystem of the project area.

Mitigation

- Avoid unnecessary cutting of plant species during site clearance if needed.
- 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.

Chapter 8. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

8.1. Mobilization of ESMP Team

The ESMP Team will be mobilized to the Sub-project site for implementation of the ESMP along with the award of construction contract since the logistic support to the ESMP will be provided by the KMC 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 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 by the Focal Person of KMC, 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.
iv. Monitoring will also cover the analysis reports for air and noise as applicable.
v. Summary of the findings of the monitoring for the compliance of environment and social aspects will be submitted to the World Bank through the PIU.

8.3. Monitoring at Sub-project Level

8.3.1. Construction Phase Monitoring

The construction phase monitoring of the various sub-project components will be required for the 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 KMC. 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
- Tree Plantation 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).

8.3.2. Operational Phase Monitoring

The overall responsibility of compliance of the operational phase will be with the KMC. In the organizational structure of the KMC, 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 KMC 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 KMC 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 KMC will submit the operational phase MP compliance reports to PMU for further submission to the World Bank.

8.3.3. Environmental and Social Management Plan (ESMP)

The monitoring of ESMP 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 program level is shown in Figure 10-1 below.
Environmental and Social Management and Monitoring Plan is developed to address the environment and social issues that may arise during construction and operational activities.

Figure 10-1: 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 KMC, 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 K). - 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	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	- Before initiation of construction phase Monthly	**Monitoring Responsibility (MR)** Focal Person of KMC, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor **Reporting Responsibility (RR)** - Monthly

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.		muffs/ear plugs to workers. - Noise level testing will be carried through SEPA ***certified Lab.		reporting compliance status of E&S Parameters w.r.t SEQS will be monitored and reported by the construction contractor to PIU CLICK for onward submission 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.	E&S Team of Contractor	Visual inspection Provision of PPEs to the workers Maintenance records of	- Before initiation of Construction phase	**Monitoring Responsibility (MR)** Focal Person of KMC, Environmental Safeguard Specialist (ESS) of PIU-CLICK,

- 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. - 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		equipment and machinery Ambient Air Quality Analysis (SO_X, NO_X, CO, PM_{10}, $PM_{2.5}$, O_3,) by SEPA approved environmental laboratories		Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor **Reporting Responsibility (RR)** - Monthly reporting compliance status of E&S Parameters w.r.t SEQS will be monitored and reported by the construction contractor to PIU CLICK for onward submission 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

project execution on site.				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. - 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	E&S Team of Contractor	- Visual inspection - Waste Disposal Certificates	- Monthly	**Monitoring Responsibility (MR)** Focal Person of KMC, 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

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 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.				compliance status and report to be prepared by the IMC and share with PIU CLICK for onward submission to SEPA and the World Bank.
Water Pollution				
- Proper disposal of solid waste in designated site to sustain the water and land quality for domestic requirements. - Solid waste will not be thrown in Nullah or any water body present in the area. - Monitoring of Drinking water quality to be done to ensure that the supplied water is fit for human consumption.	- E&S Team of Contract or	- Visual inspection - Water quality testing as per Sindh standards for drinking water quality.	- Before initiation of construction - Monthly	- **Monitoring Responsibility (MR)** - Focal Person of KMC, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor - **Reporting**

				Responsibility (RR) - Monthly reporting compliance status of E&S Parameters w.r.t SEQS/SSDWQ will be monitored and reported by the construction contractor to PIU CLICK for onward submission 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	E&S Team of Contractor	- Visual inspection	- Monthly	**Monitoring Responsibility (MR)**

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		- Record checking		Focal Person of KMC, 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 present on the median of the existing road by providing the wire mesh over / around the trees. - The contractor will seek prior approval in written format from the PIU-CLICK in case a tree needs to be chopped down, if it is creating any obstruction in the construction activity - Limiting vehicular transport to defined roads as to prevent unnecessary injury and habitat destruction. - Hunting and trading of any wildlife species will be strictly prohibited; and - Strictly prohibit the harming, or taking for falconry or any other purpose of any bird species found on or around the site. -	E&S Team of Contractor	Visual inspection	- Monthly	**Monitoring Responsibility (MR)** Focal Person of KMC, 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 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	E&S Team of Contractor	- Visual inspection - Availability of PPEs - Record of EHS and COVID-19 SOPs implementation - Record of trainings or Drills	Monthly	**Monitoring Responsibility (MR)** Focal Person of KMC, 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

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 Contractor E&S Focal person to impart training on the hierarchy of control measures. ; - 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				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.

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.				
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 I). - 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	E&S Team of Contractor	- Visual inspection - GRM Register - Employment Documents of Workers	Monthly	**Monitoring Responsibility (MR)** Focal Person of KMC, 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

water closet (WC) and running water.				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 subprojects. - Ensure that subprojects 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. KMC will ensure that subprojects 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	E&S Team of Contractor	- Visual inspection - GRM Record	Monthly	**Monitoring Responsibility (MR)** Focal Person of KMC, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring Consultant (IMC) and Supervision Consultant and Construction Contractor **Reporting Responsibility (RR)** - Monthly reporting

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.				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.
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 contractor's staff must be	E&S Team of Contractor	- Visual Inspection - Public Consultation record	Monthly	**Monitoring Responsibility (MR)** Focal Person of KMC, Environmental Safeguard Specialist (ESS) of PIU-CLICK, Independent Monitoring

trained enough to respect local norms.				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.
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.
  - Underground water tank in a barren/non-agricultural land will be covered. However, in an agricultural land, the tank will be removed.
  - If the construction camp site is on an agricultural land, top soil will be preserved and good earth will be spread back for a minimum 30 cm for faster rejuvenation of the land.
  - 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
	E&S Team of Contractor	- Visual inspection
		-
			After Construction of sub-project	**Monitoring Responsibility (MR)**
				
				Focal Person of KMC, 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

certificate for satisfaction from the landowner.				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, KMC is requested to follow the following measures to mitigate the environmental and social impacts during operation phase.				
Operational Phase				
• Routine maintenance of Road and allied infrastructures, Green Belt, Trees, Signages, Street Lights; • Mowing and maintenance of plants; • Repair of traffic signs and road markings; • Pothole patching and crack sealing; • Maintenance of traffic signs and road markings; and • Removal of debris or obstacles from the road.	KMC Building & Road Department/ Engineering Department/ Horticulture Department	- Visual inspection - Maintenance Record	Weekly	Focal Person of KMC along with line departments

8.4. Sub-Project's Tentative

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**. 1,473,500/-.**

Table 9.5: ESMP Implementation Cost

Name of item	Quantity	Unit Rate	Total Amount in PKR
Masks Box	12	300	3,600
Safety Shoes	15	1,500	22,500
Safety Gloves	15	100	1,500
First Aid Box	4	600	2,400
Ear Plugs	15	100	1,500
Safety Helmets	15	500	7,500
Safety Jackets with reflectors	15	300	4,500
Sanitizer	24	500	12,000
Thermo-gun	1	5,000	5,000
Provision of Dust Bins	3	1,000	3,000
Reflective Tape	10	200	2,000
Safety cones	20	1000	20,000
Safety boards	4	1,000	4,000
SUB TOTAL 01			89,500
Environmental Analysis (By engaging Sindh EPA Certified Laboratory)			
Ambient Air Quality Analysis (SO_X, NO_X, CO, $PM_{2.5}$, PM_{10} O_3,)	13	40,000	520,000
Noise Level Monitoring	13	1000	13000
Water Quality Monitoring	12	33000	396,000
SUB TOTAL (2)			929,000
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 (3)			455,000
GRAND TOTAL (1+2+3) PKR			1,473,500/-

Chapter 9. ROLES AND RESPONSIBILITIES

9.1. Institutional Framework

The proponent KMC will be responsible for the compliance of environmental and social safeguard requirements of the CLICK Sub-project. The Sub-project activities will be monitored and managed by the Project Implementation Unit (PIU) CLICK ES team, established in Local Government Department (LGD), Government of Sindh. The ESC will be custodian of the ESMF and will support the KMC 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 individuals will be part of the ESMP team:

1. KMC Management
2. Environmental and Social Cell (ESC), PIU, CLICK
3. Design and Supervisory Consultants
4. Contractor
5. Independent Monitoring Consultant

9.3. Tasks Assigned

9.3.1. Project Implementation Unit (PIU) CLICK

The PIU, headed by the Program Director (PD), will be responsible for general execution of the project and streamlining the safeguards related tasks of the 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.

9.3.2. Environmental and Social Cell (ESC)

The Environmental and Social Cell (ESC) established in the PIU will support the KMC 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 KMC 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.

9.3.3. Supervisory Consultants

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

9.3.4. Sub-Project Contractor

The Contractor working on the proposed Sub-project will:

- The contractor to hire two separate specialists. One to look after the E&S aspects of the subproject and to ensure the implementation of ESMP on ground in true spirit. Second, EHS focal person, he/she will ensure the health and safety aspects of the subproject.
- Develop a work plan based on the environmental and social safeguards;
- Submit the work plan and schedule to the PIU, CLICK;
- Train/create awareness for all personnel and community on relevant environmental and social safeguards measures; and
- Submit implementation report on the environmental and social safeguards and

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

9.3.5. Independent Monitoring Consultant

The PIU will hire a consultant to conduct independent monitoring and evaluation (the IMC) for the implementation. The IMC shall review the implementation progress throughout the process and evaluate the level of achievement of ESMP objectives, identify gaps, if any, and propose remedial measures for implementation.

9.4. Reporting Requirements

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

9.5. Capacity Building for ESMP Implementation

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

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

- KMC Director General (Technical Services) -KMC DGT
- KMC Sr. Director (Municipal Services) -KMC DM
- DMCs Municipal Commissioners -DMC MC
- Environmental and Social Cell (ESC)
- Supervisory Consultants (ECF)
- Environmental Laboratory (EL)
- Contractors (CONTs)

9.5.1. Training of Personnel

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

At the project site itself, the training will focus on awareness about safeguard requirements among the staff who will be involved in activities related to the implementation of the 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	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	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
	Semi-annual Environmental Progress Report	Construction Managerial and Supervision Staff, Labor and subcontractors	Monthly	E&S Personnel of Contractor
Review of ESMP	Update ESMP as necessary (Change of working methods or scope of work, update ESMP as necessary)	Construction Managerial and Supervision Staff, Labor and subcontractors	Monthly	E&S Personnel of Contractor

Figure 9-1: Training Requirements for Capacity Building

9.5.2. Provision of Equipment and Supplies

The equipment and supplies required to successfully implement the ESMP are outlined in Section 9.5 in the ESMP costs. 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 Contractors working on the Sub-project.

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
	Site Selection				
1.	- 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.				
	Noise				
2.	- 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 K). - 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.				
	Air Pollution				
3.	- 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. - 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.				
	Solid and Hazardous Waste				
4.	- 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.. - 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 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.				
	Water Pollution				
5.	- Proper disposal of solid waste in designated site to sustain the water and land quality for domestic requirements. - Solid waste will not be thrown in Nullah or any water body present in the area. - Monitoring of Drinking water quality to be done to ensure that the supplied water is fit for human consumption.				
	Vehicular Traffic				
6.	- 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				
	Flora and fauna				
7.	- The contractor will avoid cutting any tree present in the project area, and will ensure protection of the trees present on the median of the existing road by providing the wire mesh over / around the				

	trees. - 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. -				
	Occupational Health and Safety				
8.	- The labor having transmittable diseases should not be allowed on the construction site; - The contractor will ensure and strictly implement the SOPs regarding COVID- 19 (refer to Annex F), including daily body temperature check, daily disinfection, quarantine management, area access management, PPEs, emergency response, and drills; - Only skilled workers will be allowed to work at the construction site; - Provision of first aid facilities for workers at site for meeting the emergency needs of workers, and providing basic medical training to specified work staff and basic medical service and supplies to workers; - Observe and maintain standards of Health and Safety towards all employees in line with WB EHS Guidelines along with				

	Sindh Occupational Health and Safety Law - The contractor will ensure that hazards associated with manual lifting are controlled by proper lifting techniques, Work rotation system will reduce the chances of being exposed to work-related stress associated with construction activities. - Unauthorized personnel will not be allowed to access the proposed project site without permission and safety permits. - Unauthorized personnel will not be allowed to access the proposed project site without permission and safety permits. - Workers should be facilitated by providing appropriate work specific PPE's such as goggles, mask, ear plugs, gloves, rubber and safety shoes and safety helmetsTraining and use of personal fall arrest systems, such as full-body harnesses and energy-absorbing lanyards as well as fall rescue procedures to deal with workers whose fall has been successfully arrested; - 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.				
	Labor Living and Working Conditions				
9.	- 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.				
	Community Health and Safety				
10.	- Ensure an assessment of health risks and potential impacts on the safety of affected communities during the design, construction, operation, and decommissioning of subprojects. - Ensure that subprojects 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. KMC will ensure that subprojects 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.				
	Socio-Culture and Cultural Heritage				
11.	- 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.				

	Site Restoration				

12.	- Contractor should 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.
	  - Underground water tank in a barren/non-agricultural land will be covered. However, in an agricultural land, the tank will be removed.
	  - If the construction camp site is on an agricultural land, top soil will be preserved and good earth will be spread back for a minimum 30 cm for faster rejuvenation of the land.
	  - 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.				

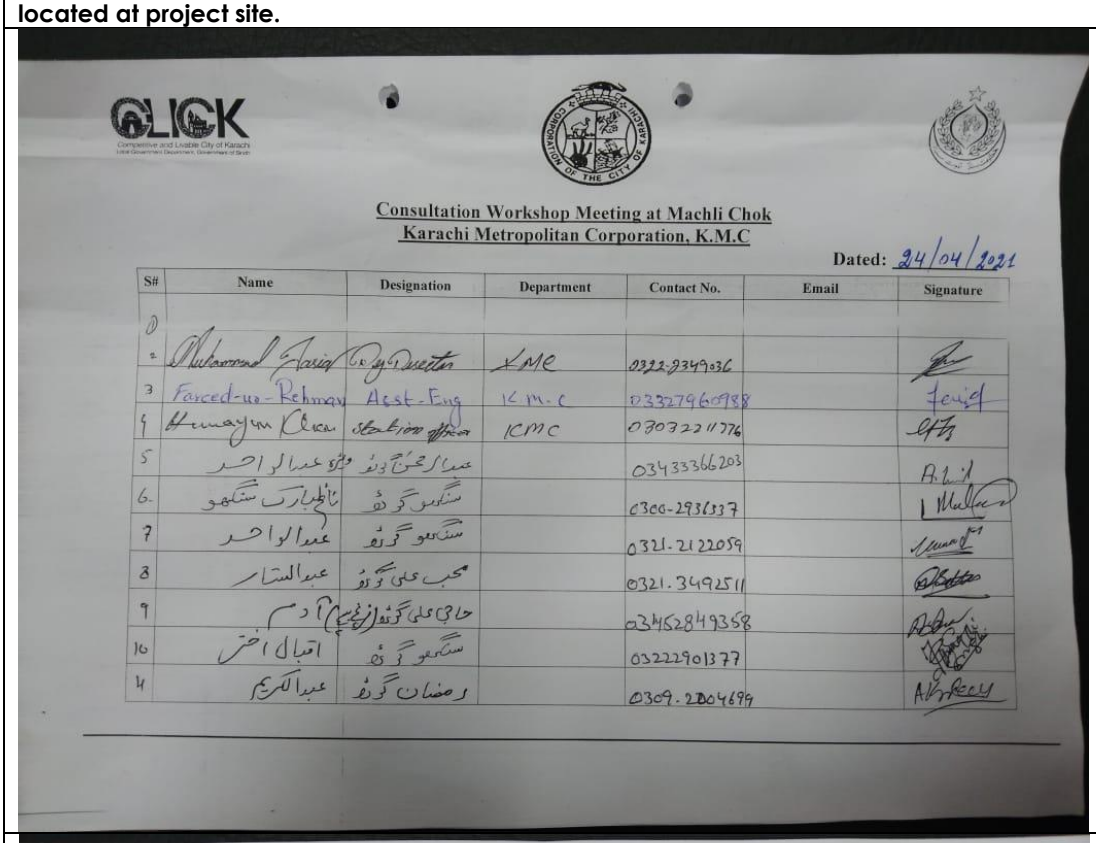
Contractor Details	**LC Focal Person Details**
Name: ----------	Name: ---------- -----
Designation: ---------- ---	Designation: ------ ----------
Signature:	Signature:
Date:	Date:
Checklist filled by:	**Checklist reviewed by:**
Name: ----------	Name: ---------- -----
Designation: ---------- ---	Designation: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

Annex B: Photographs of the Surrounding

	
A view of the existing road	A Hotel present along the proposed road
	
Rangers Check post Present along the road side.	A long view of the exisiting road

Annex C: List of Participants during Stakeholder Consultation

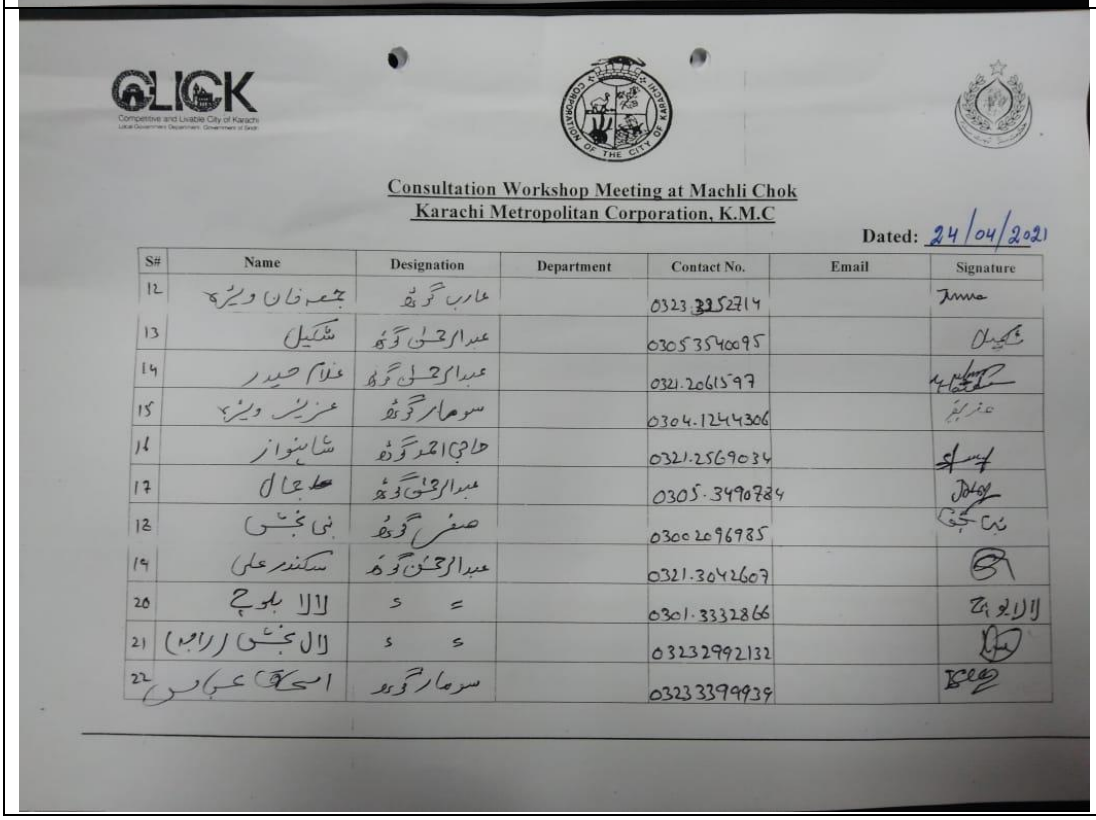
Community Consultation # 01: Community consultation meeting at Emergency response center (ERC) located at project site.



Consultation Workshop Meeting at Machli Chok
Karachi Metropolitan Corporation, K.M.C

Dated: 24/04/2021

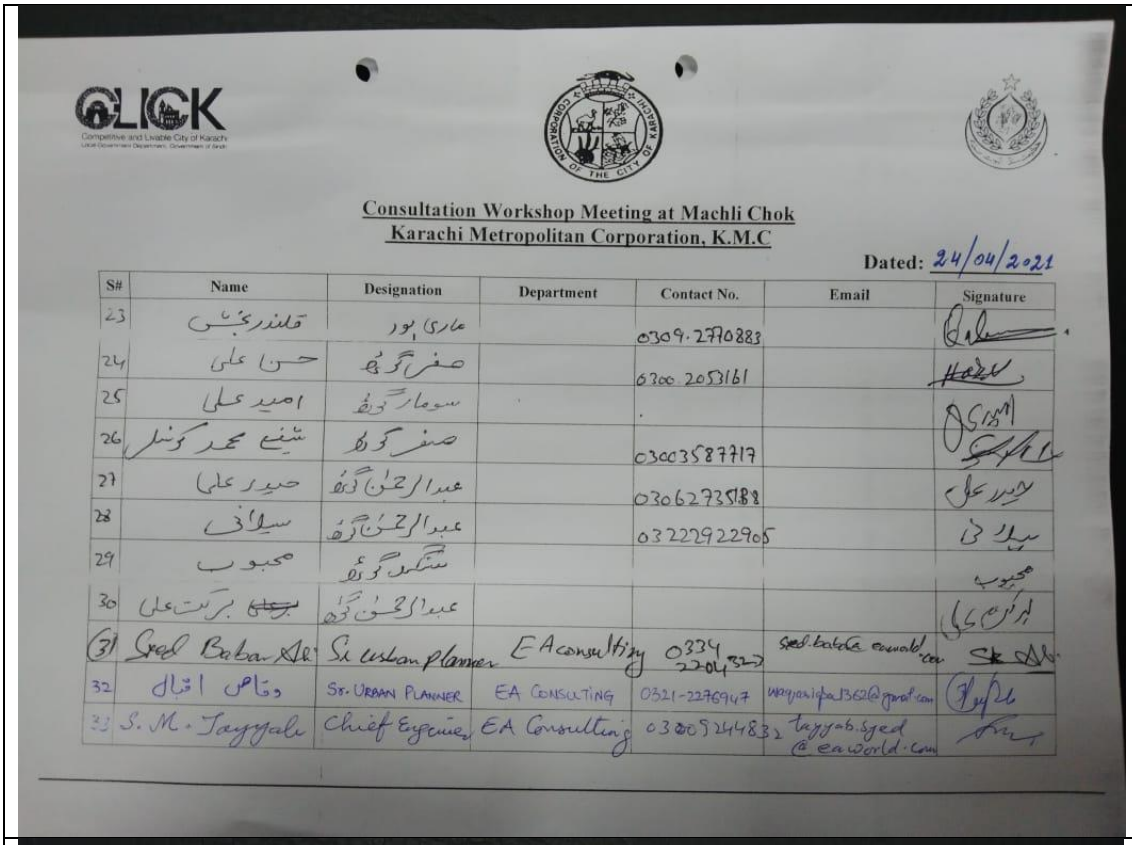
S#	Name	Designation	Department	Contact No.	Email	Signature
1						
2	Muhammad Faraz	Dy Director	KMC	0322-9349036		
3	Farced-ur-Rehman	Asst-Eng	K.M.C	03327960988		Faiq
4	Humayun Khan	Station officer	KMC	03032211776		
5	عبدالحق گوٹھ	وڈیرہ عبدالواحد		03433366203		
6	تاج بلوچ	سنگھو گوٹھ		0300-2936337		
7	عبدالواحد	سنگھو گوٹھ		0321-2122059		
8	عبدالستار	محب علی گوٹھ		0321.3492511		
9	حاجی علی گوٹھ (زمیندار) آدم			03452849358		
10	اقبال اختر	سنگھو گوٹھ		03222901377		
11	عبدالکریم	رمضان گوٹھ		0309.2004699		



Consultation Workshop Meeting at Machli Chok
Karachi Metropolitan Corporation, K.M.C

Dated: 24/04/2021

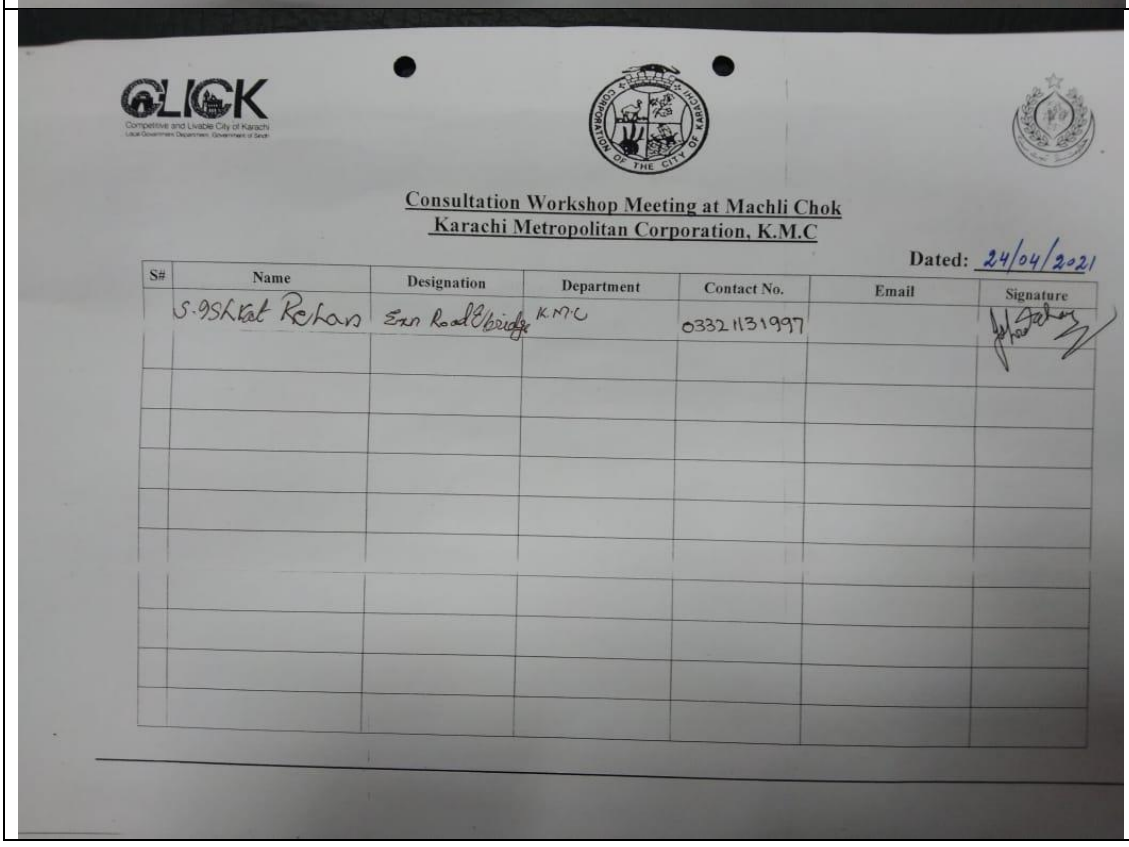
S#	Name	Designation	Department	Contact No.	Email	Signature
12	جمعہ خان وڑائچ	عارب گوٹھ		0323 3352714		
13	شکیل	عبدالحق گوٹھ		03053540095		
14	غلام حیدر	عبدالحق گوٹھ		0321.2061597		
15	عزیز وڑائچ	سومار گوٹھ		0304.1244306		
16	شاہنواز	حاجی احمد گوٹھ		0321.2569034		
17	لعل	عبدالحق گوٹھ		0305.3490784		
18	نبی بخش	صفی گوٹھ		0300 2096985		
19	سکندر علی	عبدالحق گوٹھ		0321.3042607		
20	لالا بلوچ	〃		0301.3332866		
21	لال بخش (لالہ)	〃		03232992132		
22	اسحاق عباس	سومار گوٹھ		03233399939		



Consultation Workshop Meeting at Machli Chok
Karachi Metropolitan Corporation, K.M.C

Dated: 24/04/2021

S#	Name	Designation	Department	Contact No.	Email	Signature
23	قلندر بخش	ماری پور		0309-2770883		
24	حسن علی	صفر گوٹھ		0300 2053161		
25	امید علی	سومار گوٹھ		.		
26	شیخ محمد کونسلر	صفر گوٹھ		03003587717		
27	حیدر علی	عبدالرحمن گوٹھ		03062735188		
28	سیلانی	عبدالرحمن گوٹھ		03222922905		
29	محبوب	شنگن گوٹھ				
30	برکت علی	عبدالرحمن گوٹھ				
31	Syed Babar Ali	Sr. Urban planner	EA consulting	0334 2204327	syed.babar.ea@gmail.com	
32	وقاص اقبال	Sr. URBAN PLANNER	EA CONSULTING	0321-2276947	waqasiqbal362@gmail.com	
33	S. M. Tayyab	Chief Engineer	EA Consulting	03005244832	tayyab.syed@eaworld.com	

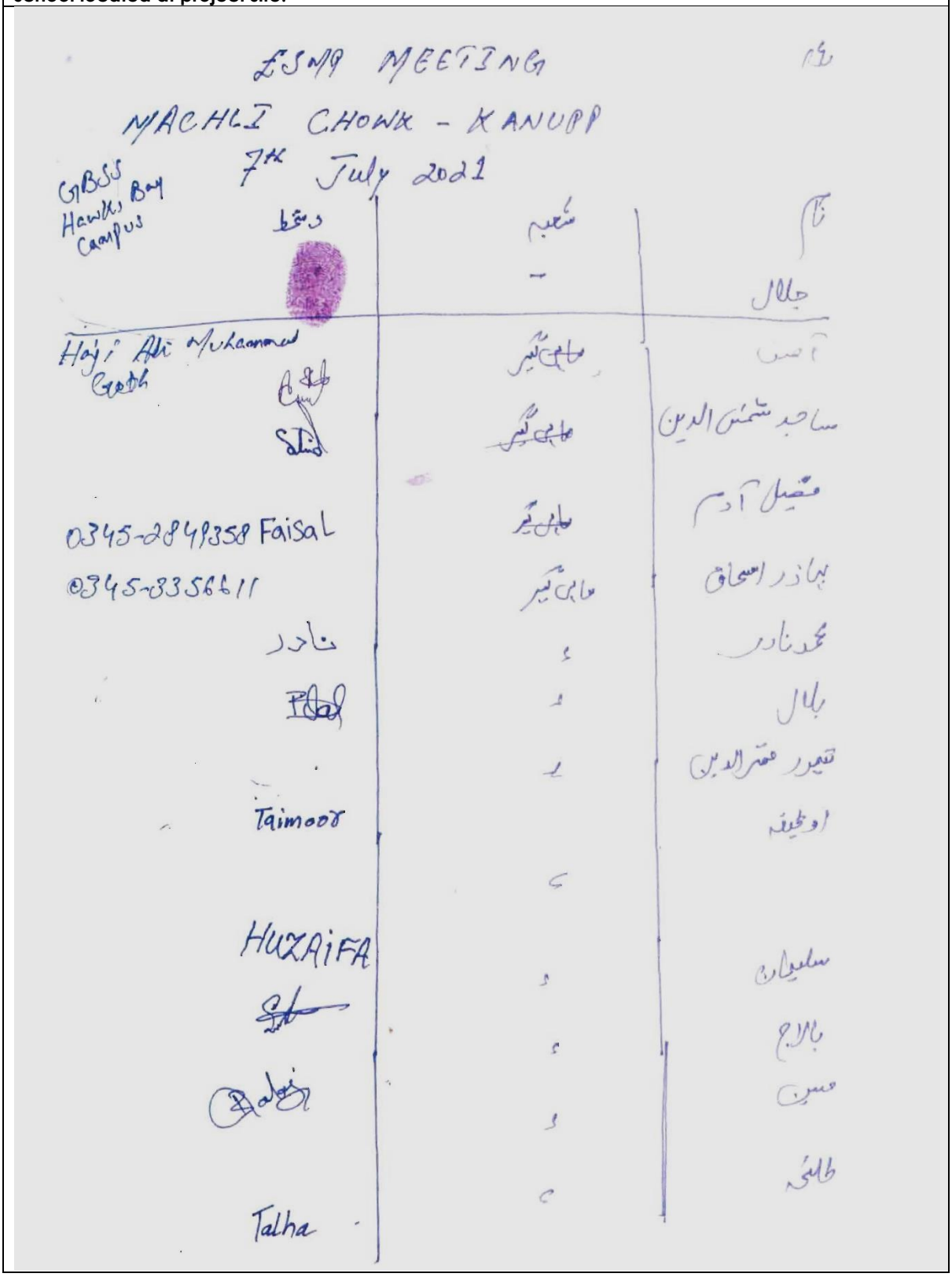


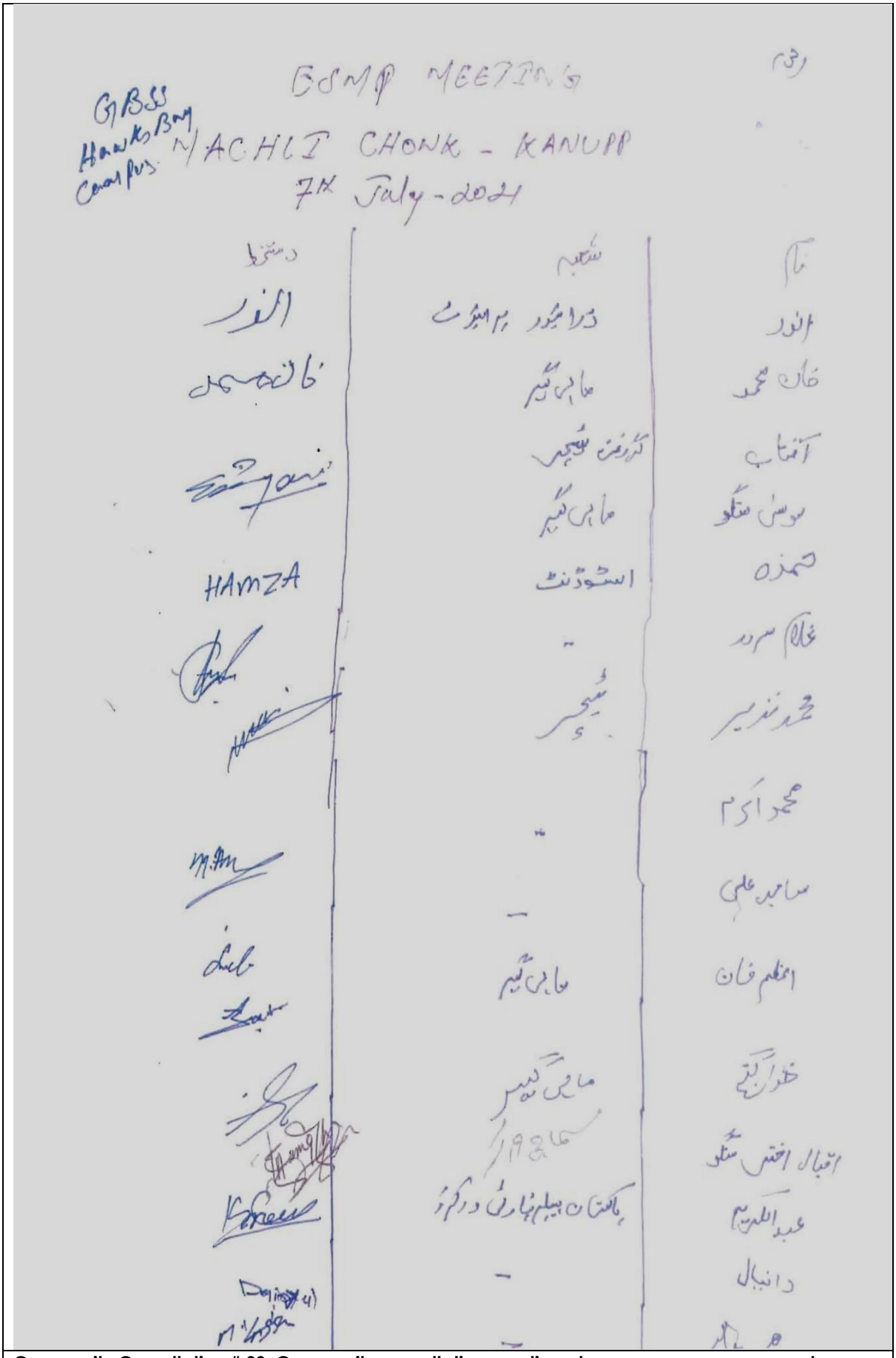
Consultation Workshop Meeting at Machli Chok
Karachi Metropolitan Corporation, K.M.C

Dated: 24/04/2021

S#	Name	Designation	Department	Contact No.	Email	Signature
	S.M Khat Rehan	Exn Road & Bridge	K.M.C	03321131997		

Community Consultation # 02: Community consultation meeting at Hawksbay Govt. boys secondary school located at project site.





Community Consultation # 03: Community consultation meeting at emergency response center

ESMP MEETING (2)

MACHLI CHOWK - KANUPP

Emergency Rescue Center

7th July 2021

نام	شعبہ	دستخط
حاجی موسیٰ	سابقہ جنرل کونسلر یوسی الانکس	[illegible]
مولا بخش	ماہی گیر	[illegible]
احمد	"	[illegible]
یعقوب	ماہی گیر	یعقوب
یونس	"	یونس
ابراہیم	"	[illegible]
اللہ نو	"	اللہ نو
میر	مزدور	[illegible]
امیر علی	مزدور	امیر علی
عبدالداد	زمیندار	[illegible]
اسحاق عباس	سرمار کوئلہ سپلائر ایسوسی ایشن صدر	[illegible]
حاجی داود	ماہی گیر	[illegible]
داد بخش [illegible]	بزنس	[illegible]
ناصر عباسی 0312-2188100	صدر پاکستان پیپلز پارٹی یونین کونسل نمبر 3 لال بکھر کیماڑی	[illegible]
محمد صدیق [illegible]	[illegible] یوسی 3 لعل بکھر	[illegible]
حافظ منظور	سوشل ورکرز	[illegible]

Emergency Response Centre Fire Bridg Hawke Bay No. 24

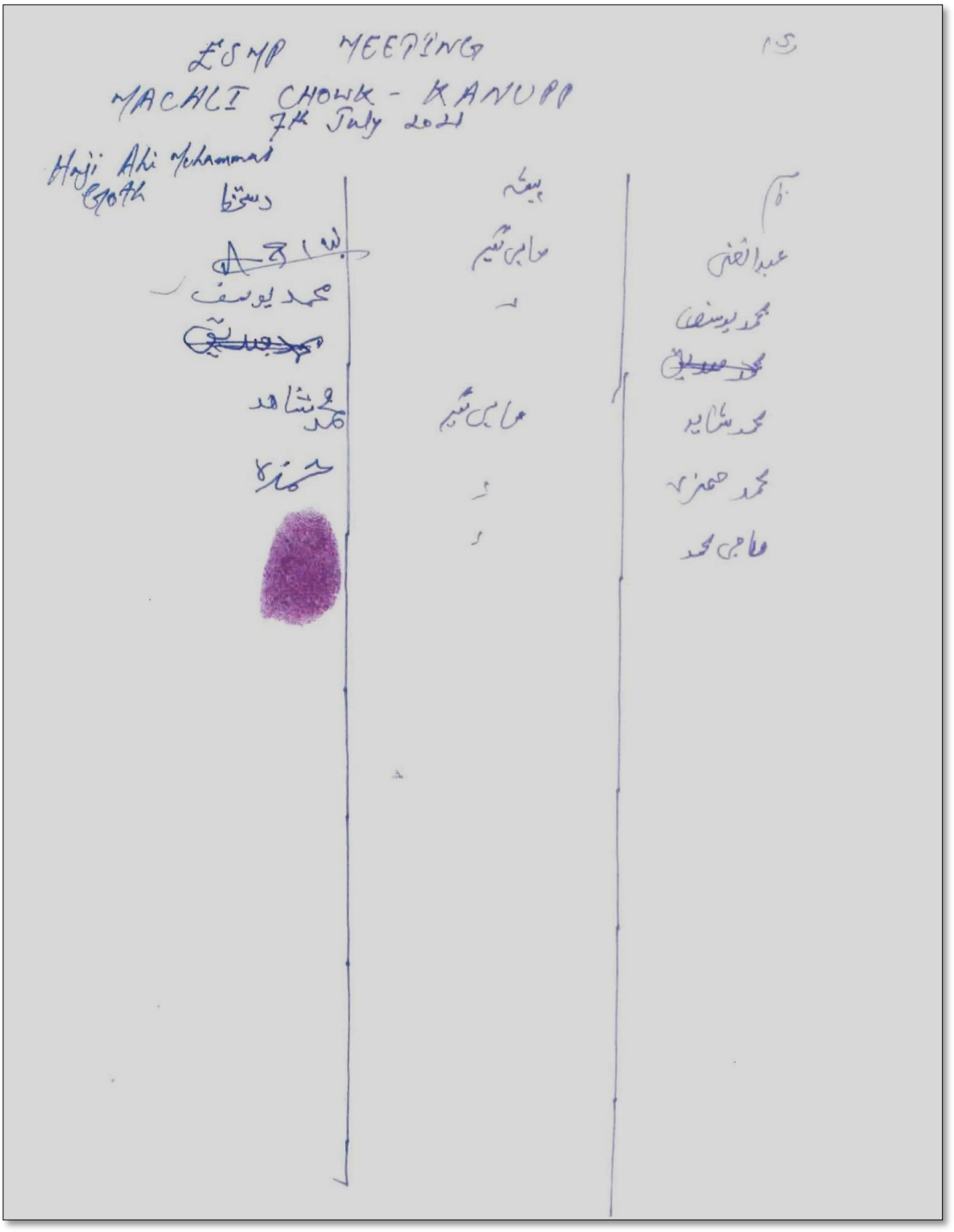
ESMP MEETING

(2)

Machli Chowk – KANUPP
7th July 2021 ERC (KMC)

دستخط	پیشہ	نام
[illegible]	لانچ کا ڈرائیور	نفیس
Hameer	″ ″ ″	عبدالطیف
[illegible]	″ ″ ″	راجہ
بیلارن	″ ″ ″	عابد علی
[illegible]	″ ″ ″	[illegible]
[illegible] 1/7/21	″ ″ ″	[illegible]
فیروز علی	″ ″ ″	[illegible] علی
Mirza [illegible]	0333-2339481 بزنس مین 0333-2133121	مبارک
		[illegible]
L Malik 0300 9936337	سابقہ ممبر کونسلر یوسی ابکر	عبدالغفور
عبدالغفور 0324-2540945		~~[illegible]~~
[illegible]		[illegible]
[fingerprint]	ماہی گیر	[illegible] بخش
	NONE	[illegible]
Sultan	Job	[illegible] اللہ یار
SLD Sllyat	ماہی گیر	[illegible] محمد
[fingerprint]	ماہی گیر	[illegible]
[fingerprint]	ماہی گیر	زوہیب
زوہیب		[illegible] محمد
Nig [illegible]	پرائیوٹ جاب [illegible]	[illegible]

Community Consultation # 04: Community consultation meeting at Haji Ali Muhammad Goth



Community Consultation # 05: Community consultation meeting at Haji Ali Muhammad Goth with women

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

Competitive & Livable City of Karachi
Local Government Department
Government of Sindh

Attendance Sheet
2021

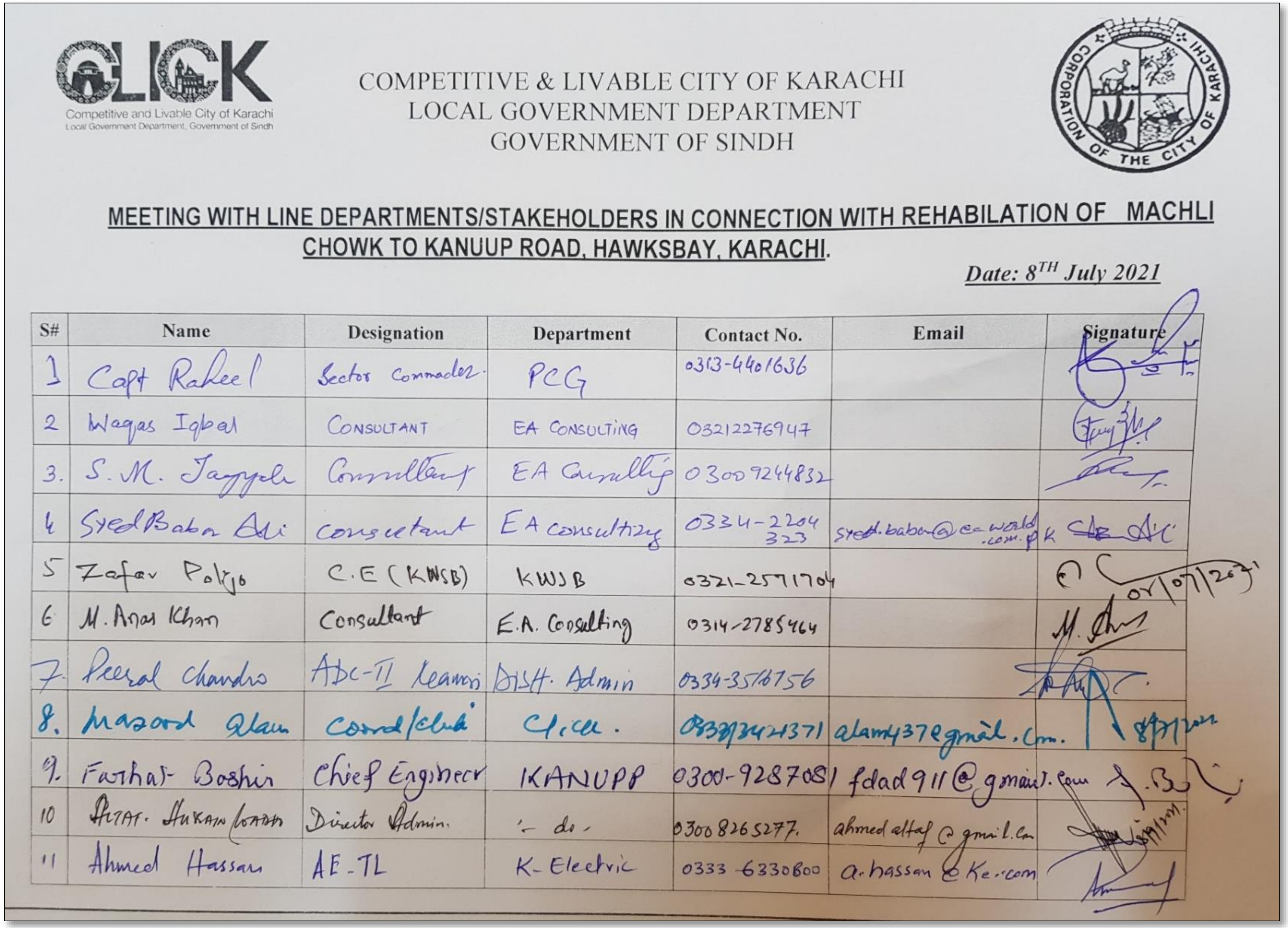
Date: 7th July

Haji Ali Muhammad Village Consultation Meeting Machli Chowk to KANUPP Road
5.9 KM Rehabilitation

S. No	Name	Profession	Signature
1	طاہرہ		طاہرہ
2	راشدہ		راشدہ
3	ممبر		ممبر
4	ذیبا		ذیبا
5	منزہ بانو		منزہ بانو
6	شیریں		شیریں
7	ذرینہ		ذیبنا
8	طاہرہ حمزہ		طاہرہ
9			
10			

DMC South
First Floor Captain KRC Road, Opposite Aram Bagh Police Station South Karachi, Sindh

Consultative meeting with line departments and secondary stakeholders at PIU CLICK office
Sub-Project for KMC, "Rehabilitation of road from machli chowk to kanupp (5.9 km), Karachi".


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

COMPETITIVE & LIVABLE CITY OF KARACHI
LOCAL GOVERNMENT DEPARTMENT
GOVERNMENT OF SINDH

CORPORATION OF THE CITY OF KARACHI

MEETING WITH LINE DEPARTMENTS/STAKEHOLDERS IN CONNECTION WITH REHABILATION OF MACHLI CHOWK TO KANUUP ROAD, HAWKSBAY, KARACHI.

Date: 8TH July 2021

S#	Name	Designation	Department	Contact No.	Email	Signature
1	Capt Raheel	Sector Commader	PCG	0313-4401636		[signature]
2	Waqas Iqbal	CONSULTANT	EA CONSULTING	03212276947		[signature]
3.	S. M. Jaffer	Consultant	EA Consulting	03009244832		[signature]
4	Syed Baban Ali	consultant	EA consulting	0334-2204323	syed.baban@ea-world.com.pk	[signature]
5	Zafar Palijo	C.E (KWSB)	KWSB	0321-2571704		[signature] 08/07/2021
6	M. Anas Khan	Consultant	E.A. Consulting	0314-2785464		[signature]
7.	Peeral Chandio	ADC-II Keamari	Distt. Admin	0334-3516756		[signature]
8.	Masood Alam	Coord/Click	Click.	03332421371	alam437@gmail.com.	[signature] 8/7/2021
9.	Farhat Bashir	Chief Engineer	KANUPP	0300-9287081	fdad911@gmail.com	[signature]
10	Altaf Hussain Lashari	Director Admin.	- do -	03008265277.	ahmedaltaf@gmail.com	[signature]
11	Ahmed Hassan	AE-TL	K-Electric	0333-6330800	a.hassan@ke.com	[signature]

COMPETITIVE & LIVABLE CITY OF KARACHI
LOCAL GOVERNMENT DEPARTMENT
GOVERNMENT OF SINDH

MEETING WITH LINE DEPARTMENTS/STAKEHOLDERS IN CONNECTION WITH REHABILATION OF MACHLI CHOWK TO KANUUP ROAD, HAWKSBAY, KARACHI.

Date: 8TH July 2021

S#	Name	Designation	Department	Contact No.	Email	Signature
12	Ghulam Yaseen Lashari	Senior Engineer	PTCL	0333-2131753	yaseen.lashari@ptcl.net.pk	
13	Aamir Sheikh	E/Inspector	SEPA	0333 2201188	aamirsheikh330@gmail.com	

Presentation of Environmental and Social Checklist for the Click (Competitive and Livable City of Karachi) Sub-Project for KMC, "Rehabilitation of road from machli chowk to kanupp (5.9 km), Karachi".

Sindh Environmental Protection Agency
Government of Sindh

ATTENDANCE SHEET

Presentation of CLICK SUB-PROJECT REHABILITATION OF ROAD FROM MACHLI CHOWK TO KANUPP (5.9KM) KARACHI. held on 13th AUG, 2021 at Sindh EPA, Karachi

Time 1500hrs

S. No	Name	Designation	Organization	Contact No.	Signature
1.	MUHAMMAD AQIB UDDIN	Sr. Env Sp	CLICK Project LGD, GoSindh	0300-2408109	
2.	S. M. TAYYAB	Consultant-	EA Consulting	03009244832	Tayyab
3.	Waqas Iqbal	Project Manager EA Consultant	//	03212276947	
4	M. Anas Khan	Environment	E.A. Consulting	0314-2785464	
05	Syed Babar Ali	Social safeguard	EA consulting.	0334-2204323	
06	Tayyab Shafiqua	Env. Safeguard Specialist	PIU-CLICK	0300 3283791	
07	Mossawir Qureshi	HSE Specialist	PIU-SWEEP	0312 3979229	

Annex D: Traffic Management Plan

Traffic Management:

The contractor will comply with the traffic control plan to ensure that safe passageways are provided for all individuals and livestock. For each sub-project, the traffic management plan will contain locations where alternate routes or temporary diversions are given.

The sub-project is for the "Rehabilitation of the Existing Road from Machli Chowk To KANNUP (5.9 km)." The road rehabilitation process involves 4 lanes in the sub-project. To avoid inconvenience for the local commuters due to the construction/rehabilitation of the existing road, one of the dual carriageways will remain open for traffic movement, while the work on the other side will be undertaken. To manage the traffic effectively, a traffic management and monitoring plan has been created and will be implemented for the sub-project.

Table G.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 LCs. - The contractor will take all necessary measures for the safety of traffic during construction work and provide, erect and	E&S Team of Contractor / Sub-contractor -	- Visual Inspection -	During construction and Post execution of sub-project	Focal Person of KMC ESS and Supervision Consultant

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.				

- 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

- Pedestrian safety:

Pedestrians and bicyclists are at greatest risk of serious injury from collisions with moving vehicles. Children are generally the most vulnerable due to lack of experience and knowledge of traffic related hazards, their behavior while at play, and their small size making them less visible to motorists. Recommended pedestrian safety management strategies include the following:

- Provision of safe corridors along the road alignment and construction areas and safe crossings for pedestrians and bicyclists during construction and operation. Crossing locations should take into account community preferences, including those related to convenience or personal safety (e.g. the prevalence of crime at potential crossing point locations).
- Installation of barriers (e.g. fencing, plantings) to deter pedestrian access to the roadway except at designated crossing points.

- Installation and maintenance of speed control and traffic calming devices at pedestrian crossing areas.
- Installation and maintenance of all signs, signals, markings, and other devices used to regulate traffic, specifically those related to pedestrian facilities or bikeways12.

- Traffic Safety:

Collisions and accidents can involve a single or multiple vehicles, pedestrians or bicyclists, and animals. Many factors contribute to traffic accidents. Some are associated with the behavior of the driver or the quality of the vehicle, while others are linked to the road design, or construction and maintenance issues. Recommendations to prevent, minimize, and control risks to the community from traffic accidents include:

- Installation and maintenance of all signs, signals, markings, and other devices used to regulate traffic, including posted speed limits, warnings of sharp turns, or other special road conditions13.
- Setting of speed limits appropriate to the road and traffic conditions.
- Design of roadways to accommodate anticipated traffic volume and flow.
- Maintenance of the road to prevent mechanical failure of vehicles due to road conditions.
- Construction of roadside rest areas at strategic locations to minimize driver fatigue.
- Installation of measures to reduce collisions between animals and vehicles (e.g. use of signs to alert drivers on road segments where animals frequently cross; construction of animal crossing structures and use of reflectors along the roadside to deter animal crossings at night when vehicles are approaching).
- Targeting the use of a real-time warning system with signage to warn drivers of congestion, accidents, adverse weather or road conditions, and other potential hazards ahead.

- Emergency Preparedness:

Emergency situations most commonly associated with road operations include accidents involving single or multiple vehicles, pedestrians, and / or the release of oil or hazardous materials. Road operators should prepare an emergency preparedness and response plan in coordination with the local community and local emergency responders to provide timely first aid response in the event of accidents and hazardous materials response in the event of spills.

- Management Practices To Prevent And Control Moving Equipment and Traffic Safety:
  - Establishment of work zones to separate workers on foot from traffic and equipment by:
    - Routing of traffic to alternative roads when possible.
    - Closure of lanes and diversion of traffic to the remaining lanes if the road is wide enough (e.g. rerouting of all traffic to one side of a multi-lane highway.
    - Where worker exposure to traffic cannot be completely eliminated, use of protective barriers to shield workers from traffic vehicles, or installation of channeling devices (e.g. traffic cones and barrels) to delineate the work zone.
    - Regulation of traffic flow by warning lights.
    - Design of the work space to eliminate or decrease blind spots.
  - Reduction of maximum vehicle speeds in work zones.
  - Training of workers in safety issues related to their activities, such as the hazards of working on foot around equipment and vehicles; and safe practices for work at night and in other low-visibility conditions, including use of high-visibility safety apparel and

[12] *As required by public agencies with jurisdiction over the project site. In their absence, project developers and operators should refer to sources from well-developed regulatory frameworks such as the US Code of Federal Regulations (CFR) Part 655, Subpart F and the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD, 2003)*

[13] *Based on local regulatory requirements or, in their absence, sources such as the US Code of Federal Regulations (CFR) Part 655, Subpart F and the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD, 2003)*

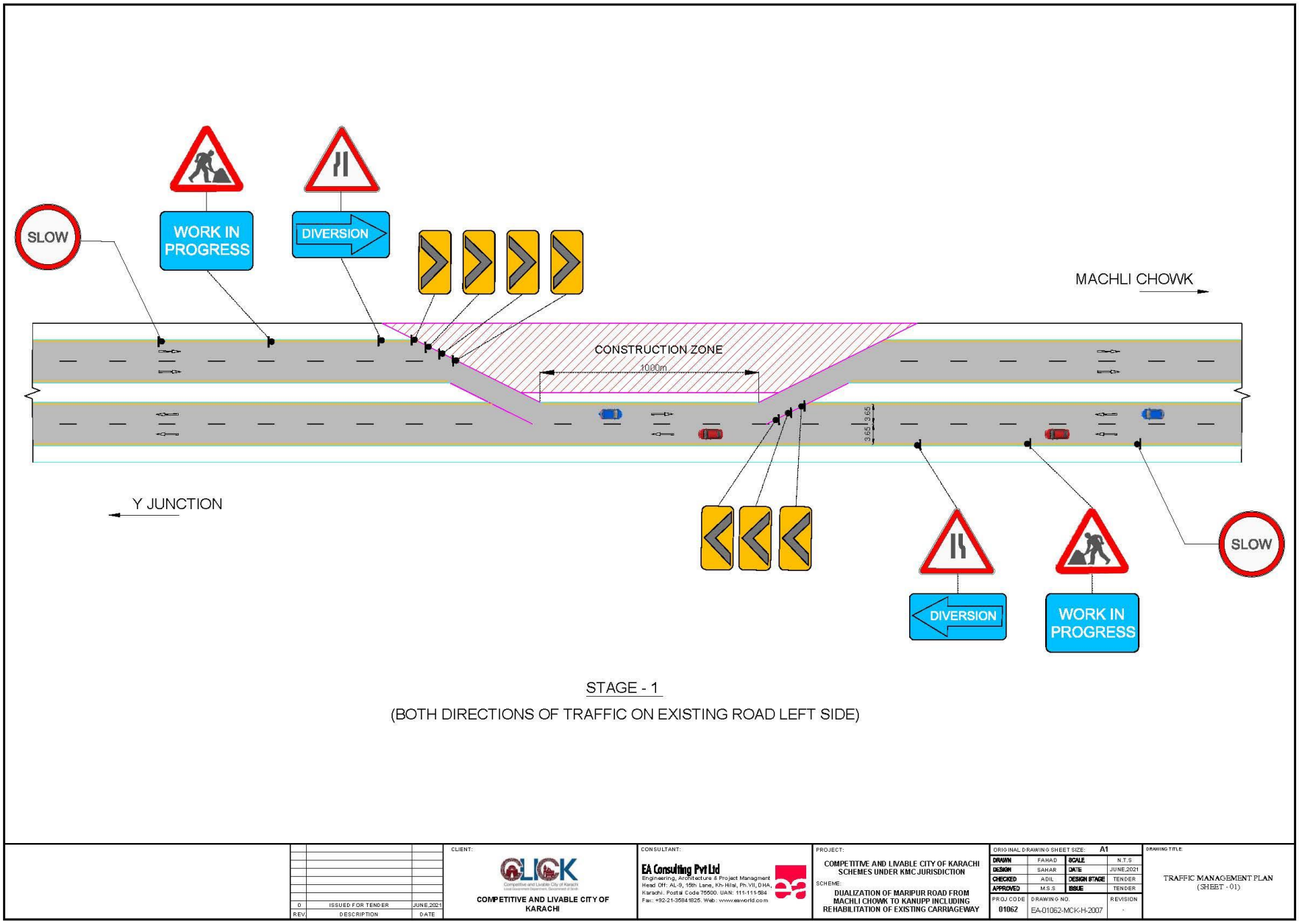
proper illumination for the work space (while controlling glare so as not to blind workers and passing motorists).

- 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 KMC. 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.

Traffic Management Plan is shown in the figure below.



STAGE - 1

(BOTH DIRECTIONS OF TRAFFIC ON EXISTING ROAD LEFT SIDE)

REV.	DESCRIPTION	DATE
0	ISSUED FOR TENDER	JUNE,2021

CLIENT: COMPETITIVE AND LIVABLE CITY OF KARACHI

CONSULTANT: EA Consulting Pvt Ltd
Engineering, Architecture & Project Managment
Head Off: AL-9, 15th Lane, Kh-Hilal, Ph-VII, DHA, Karachi. Postal Code 75500. UAN: 111-111-584
Fax: +92-21-35841925. Web: www.eaworld.com

PROJECT: COMPETITIVE AND LIVABLE CITY OF KARACHI SCHEMES UNDER KMC JURISDICTION

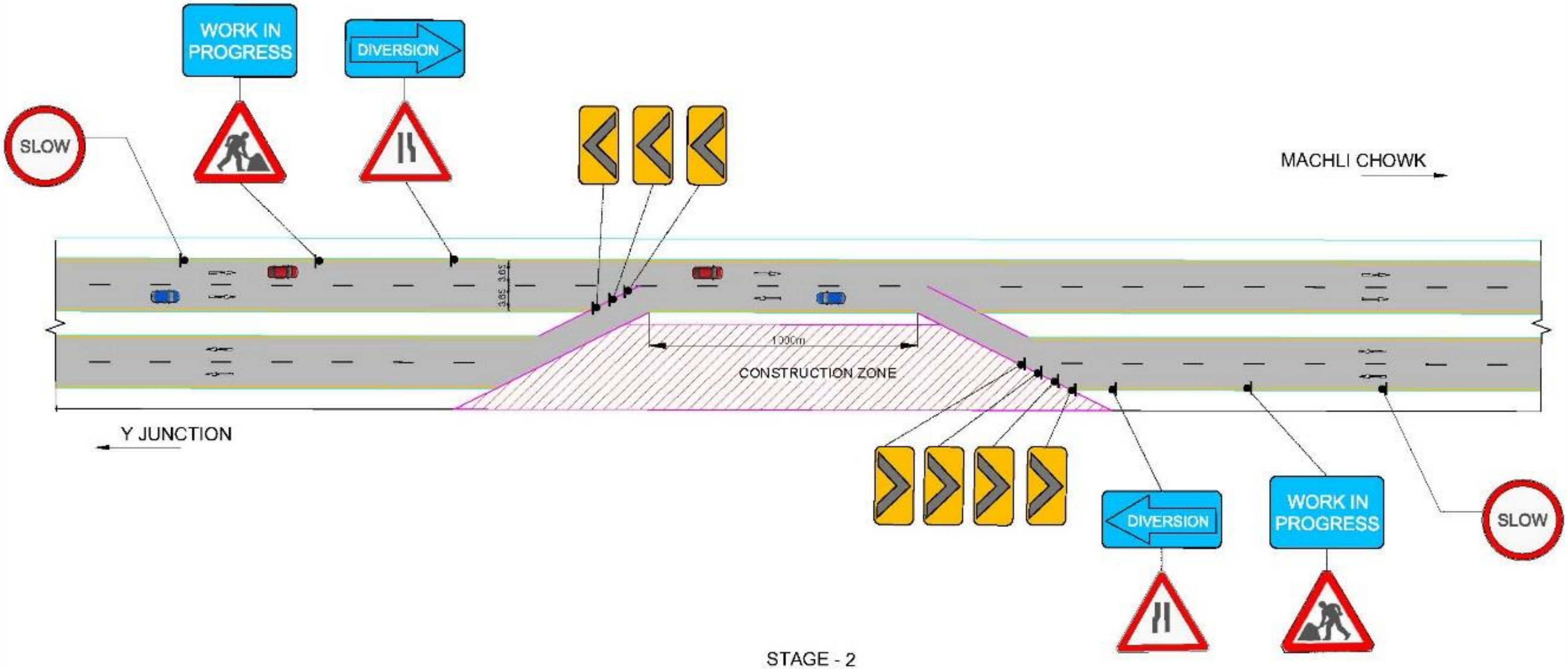
SCHEME: DUALIZATION OF MARIPUR ROAD FROM MACHLI CHOWK TO KANUPP INCLUDING REHABILITATION OF EXISTING CARRIAGEWAY

ORIGINAL DRAWING SHEET SIZE: A1

DRAWN	FAHAD	SCALE	N.T.S
DESIGN	SAHAR	DATE	JUNE,2021
CHECKED	ADIL	DESIGN STAGE	TENDER
APPROVED	M.S.S	ISSUE	TENDER

PROJ CODE	DRAWING NO.	REVISION
01062	EA-01062-MCK-H-2007	-

DRAWING TITLE: TRAFFIC MANAGEMENT PLAN (SHEET - 01)



STAGE - 2

(BOTH DIRECTIONS OF TRAFFIC ON EXISTING ROAD RIGHT SIDE)

REV	DESCRIPTION	DATE
0	ISSUED FOR TENDER	JUNE 2021

CLIENT: COMPETITIVE AND LIVABLE CITY OF KARACHI

CONSULTANT: EA Consulting Pvt Ltd — Engineering, Architecture & Project Management. Head Off: AL-3, 15th Lane, Kh-Bilal, Ph.VII, DHA, Karachi. Postal Code 75500. UAN: 111-114-504 Fax: +92-21-3584 1825. Web: www.eaworld.com

PROJECT: COMPETITIVE AND LIVABLE CITY OF KARACHI SCHEMES UNDER KMC JURISDICTION

SCHEME: DUALIZATION OF MARIPUR ROAD FROM MACHLI CHOWK TO KANUPP INCLUDING REHABILITATION OF EXISTING CARRIAGEWAY

ORIGINAL DRAWING SHEET SIZE	A1		
DRAWN	FAHAD	SCALE	N.T.S
DESIGN	SAHAR	DATE	JUNE 2021
CHECKED	ADIL	DESIGN STAGE	TENDER
APPROVED	M.S.S	ISSUE	TENDER
PROJ CODE	DRAWING NO.		REVISION
01062	EA 01062-MCK-H-2008		-

DRAWING TITLE: TRAFFIC MANAGEMENT PLAN (SHEET - 02)

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:

1. 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;
2. Immediately notify a construction site in-charge. The in-charge will then notify the PIU-CLICK and the Supervision Consultant;
3. Record details in Incident Report and take photos of the find;
4. 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;
5. 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;
6. 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.
7. 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).
8. The onsite archaeologist provides the Heritage team with photos, other information as relevant for identification and assessment of the significance of heritage items.
9. The Ministry must investigate the fact within 2 weeks from the date of notification and provide response in writing.
10. 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;
11. Construction works could resume only after permission is granted from the responsible authorities.
12. 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: 1st Floor, DMC South Office,
KRC Captain Road, Haqqani Chowk, Aaram Bagh
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Landline# +92- 21- 99218874

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 ESMP/ESR 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	
A. 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.
B. 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	
A. 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.
B. 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.
C. 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.
D. 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 H-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.
E. 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.
F. 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.
G. Role of supervision consultant	• The consultant must ensure the implementation of Environmental and Social Management Plans as per the ESRs and ESMPs along with afore 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	
A. Post Screening	• If a worker shows any symptoms of COVOD-19, he should be immediately reported to the concerned health department.
-	• All waste (PPEs and sanitation related) shall be disposed

B. Cleaning and waste disposal	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 LCs

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.

کوویڈ۔۱۹ وبائی امراض اور صحت سے متعلق حفاظتی اقدامات

کورونا وائرس (COVID-19) وبائی مرض کے دوران کام کرنے والے تعمیراتی مقامات کو اس بات کا یقین کرنے کی ضرورت ہے کہ وہ انفیکشن کے خطرے اور پھیلاؤ کو کم سے کم کرنے کے اقدامات پر عمل کر کے اپنی افرادی قوت کی حفاظت کر رہے ہیں۔ تعمیراتی معیاری پروٹوکولز، تعمیراتی ٹھیکیداروں، سب ٹھیکیداروں اور دیگر کے لئے بہترین طریقوں کا خاکہ پیش کرتا ہے تاکہ COVID-19 بحران کے دوران فرائض انجام دینے کے لئے درکار تمام کارکنوں کی صحت اور حفاظت کو برقرار رکھا جاسکے۔ پروٹوکول، جس میں روک تھام، پتہ لگانے اور رد عمل کے اقدامات شامل ہیں، بحران کے اثرات کو کم سے کم کریں گے اور کلک کے تحت ذیلی منصوبوں پر آسانی سے عملدرآمد کو یقینی بنائیں گے۔

کوویڈ۔۱۹ وبائی بیماری کی غیر معمولی نوعیت کے پیش نظر، ٹھیکیدار سائٹ پر صحت اور حفاظت سے متعلق اقدامات کو برقرار رکھنے کے اور کوویڈ۔۱۹ وبائی بیماری کی روک تھام کے لیے حفاظات صحت کی ضروریات کے بارے میں مناسب انتظامیات کو یقینی بنانے کے لیے تمام ضروری احتیاتی تدابیر اپنانے کے پابند ہیں۔ کوویڈ۔۱۹ کے پھیلاؤ کے لیے تعمیراتی مقامات پر عمل درامد کرنا چاہیے۔

دائرہ کار:

ان رہنما خطوط کا مقصد معاشرتی دوری سے متعلق ESR / ESMP کی سفارشات کے مطابق تمام اقسام اور سائز کی تعمیراتی سرگرمیوں پر یکساں اقدامات کی فراہمی اور کلک پروجیکٹ سے وابستہ ٹھیکیداروں، ذیلی ٹھیکیداروں، اور دیگر افراد کی تعمیل کے لئے ہر ممکن کوشش کو یقینی بنانا ہے۔

سرگرمیاں	احتیاتی تدابیر
عمل درامد سے پہلے	
پروفائل کی تیاری	ا۔افردی قوت کا تفصیلی پروفائل ۲۔نام، پتے اور رابطہ نمبر کی فہرست تیار کرنا ۳۔تمام افرادی قوت کی فہرست تیار کرنا بشمول مقامی آبادی سے تعلق رکھنے والے افراد اور وہ لوگ جو مکان کرایہ پر لیں گے کو ہدایت کی جائے کے وہ سائٹ کے قریب موجودہ لوگوں سے رابطہ کم سے کم رکھیں اور مخصوص حالات میں اپنے معاہدے کی مدت کے دوران سائٹ چھوڑنے سے بھی منع کیا جائے تاکہ مقامی ابادیون سے رابطہ کم سے کم ہو۔
ابتدائی اد کریننگ	ا۔تمام اندراج شدہ افرادی قوت کو ابتدائی کوویڈ۔۱۹۔اسکریننگ کے عمل سے گزارا جائے تاکہ ان کی اچھی صحت کی تصدیق ہو سکے۔ ۲۔سائٹ پر تھرموگن کی دستیابی کو یقینی بنایا جائے۔ ۳۔ملازمین کے درجہ حرارت کا ریکارڈ رکھا جائے ۴۔اگر کسی ملازمین میں کوویڈ۔۱۹ (جیسی بخار، خشک کھانسی، تھکاوٹ) کی علامات ظاہر ہوں تو سائٹ پر موجود نگران کی زمہ داری ہے کی وہ متعلقہ ملازمین کو فوری طور پر کام سے روک دے اور اسے قریبی مرکزی صحت بھجوائے۔متاثرہ کارکن کے ساتھ رابطے میں رہنے والے کارکن کو ۱۴ دن تک سائٹ پر کام کرنے سے روکا جائے
عمل درامد کے دوران	
محدود نقل و حرکت	ا۔کام کی جگہ پر داخلی خارجیر استون پر کارکون اور دیگر افراد کی آمد و فروخت کو محدود اور ریکارڈ میں رکھا جائے۔ممکنہ اقدامات میں یہ شامل ہونا چاہیے۔ ۲۔سائٹ پر کام کرتے، آرام کرتے یا کھانا کھاتے ہوئے سماجی فاصلہ بر قرار رکھیں۔ ۳۔ہنگامی حالات سے نمٹنے کے لیے منصوبہ بندی کی جائے جس میں علاج کی سہولیات کی تفصیل، صحت سے متعلق حکام کو مطلع کرنے کا طریقہ کار، سائٹ کو صاف ستھرا رکھنے اور بقیہ ملازمین کی

کوویڈ۔۱۹ وبائی امراض اور صحت سے متعلق حفاظتی اقدامات

	اسکریننگ شامل ہیں۔ ۴۔ ایسے کارکن جو سائٹ لیبر کیمپیوٹر میں رہتے ہیں ان کے لیے (اگر کوئی ہے تو) سماجی فاصلہ کے پرٹوکول کو مد نظر رکھتے ہوئے ان کے لیے الگ رہائش کا بندوبست کیا جائے۔
زاتی سوز وسامان کی حفاظتی اقدامات	ا۔ سائٹ پر زاتی حفاظتی سازوسامان بشمول ڈسپوزیبل ماسک اور دستانون کی دستیابی کو یقینی بنایا جائے۔ ۲۔ سائٹ پر موجود حفاظتی سازوسامان کا ریکارڈر کھا جائے۔ ۳۔ اگر عالمی سطح پر ذاتی سامان کی قلت ہو جائے تو متبادل کے طور پر ڈسٹ ماسک، کنسٹرکشن والے دستانے اور حفاظتی عینک کی فراہمی کو یقینی بنایا جائے۔
عام حفاظات صحت	ا۔ ملازمین کی حوصلہ افزائی کی جایے تاکہ وہ سائٹ پر کم سے کم ۲۰ سیکنڈ تک ہاتھ دھوتے رہین۔ سائٹ کے اہم مقامات پر صابن فراہم کیا جائے۔ جہاں صابن رکھنے کی جگہ نہیں یہ مناسب نہین وہاں سینیٹائزر رکھے جائں۔ ۲۔ کم سے کم ایک میٹر کی دوری بر قرار رکھیں۔
ٹریننگ سیشن	ا۔ ٹھیکیدار کے ماحولیاتی وسماجی ماہریں ٹھیکیدار کے دیگر عملے کے لیے آگاہی سیشن کا اہتمام کرے گی۔ اس سیشن میں حفاظتی اقدامات ذاتی حفاظت کے سازوسامان کا صحیح استعمال، کام کے دوران صحت کے مسائل اور ضابطہ اخلاق بالخصوص پرائویسی اور سماجی فاصلے پر ٹریننگ دی جائے گی۔ ۲۔ کووڈ۔۱۹۔ ایس اوپیز کو سائٹ پر واضح طور پر آوازیں کیا جائے۔ ۳۔ سائٹ سپروائزر افرادی قوت کے ساتھ وقتن بہ وقتن بریفینگ کا بندوبست کیا جائے۔ اور ملازمیں کو اس کی ترغیب کی جائے۔ ۴۔ سائٹ کے داخلے راستے پر تعینات ورکرز کو ٹریننگ اور مسائل فراہم کیے جائین تاکہ وہ ورکرز کا درجہ حرارت چیک کر سکیں اور رکارڈر کھ سکیں۔
عوامی شکایات کے ازالے کا نظام	ٹھیکیدار پی ایم یو کے بنائے گئے شکایات کے ازالے کے نظام کو سائٹ پر موثر بنائے تاکہ کووڈ۔۱۹۔ کے ایس اوپیز سے متعلقہ شکایات کا ازالہ ہو سکے۔
پی ایم یو کا کردار	ا۔ پی ایم یو ٹھیکیدارون کو کووڈ۔۱۹۔ چیک لسٹ فراہم کرے گا۔ رہنمائی اور مدد کے لیے ٹھیکیدار پی ایم یو کے ساتھ رابطے میں رہیں۔

۔ کووڈ۔۱۹ وبائی امراض اور صحت سے متعلق حفاظتی اقدامات

سپروژن کنسلٹنٹ کا کردار	ا۔ کووڈ۔۱۹۔ سے متعلق سرگرمیوں پر ٹوکول کے ساتھ ماحولیاتی اور حفاظتی منصوبے (ای ایس پی) کے نفاذ کو یقینی بنایا جائے۔ ۲۔اس بات کو یقینی بنایا جائے کہ ٹھیکیدار کنٹریکٹ کے مطابق ورکرز کو ضروری حفاظتی ساماں مہیا کرے۔
عملدرآمد کے بعد	
اسکریننگ کے بعد	اگر کسی ملزمیں میں کووڈ۔۱۹۔ کی علامات پائی جاتی ہے تو فوراً متعلقہ محکمہ صحت کو اطلاع دی جائے۔
صفائی اور کوڑا کرکٹ کو تلف کرنا	ا۔استعمال شدہ حفاظتی ساماں اور دیگر فضلہ ہاسٹل ویسٹ مینجمنٹ رولز ۲۰۱۴ کے مطابق تلف کیا جائے۔ ۲۔صفائی ستھرائی کے سازوساماں اور جراثیم کش ادویات فراہمی کو یقینی بنایا جائے۔ ۳۔وہ عملہ جو کووڈ۔۱۹۔ سے متاثرہ جگہ یا ایسی جگہ جہاں بیماری کے پھیلنے کا خدشہ ہو انہیں مناسب سازوسامان مہیا کیا جائے۔ اگر کسی وجہ سے مناسب حفاظتی سامان دستیاب نہ ہو سکے تو اس کا بہترین متبادل مہیا کیا جائے۔

کووڈ۔۱۹۔ فوکل پرسن کی ذمہ داریاں

ا۔ کووڈ۔۱۹۔ سے متعلقہ مسائل کی مانیٹرنگ اور پورٹنگ کو یقینی بنایا جائے۔

۲۔ ٹھیکیداروں کے مابین رابطہ اور پورٹنگ کے انتظامات۔

۳۔ کووڈ۔۱۹۔ کے پھیلاو کو کم کرنے کے لیے ملازمیں کی آگاہی اور تربیت کرنا۔

۴۔ ملازمیں کے بیمار ہونے کی صورت (ڈبلیو۔ایچ۔او) کے رہنما اصولوں پر عمل کیا جائے۔

۵۔ سائٹ پر کووڈ۔۱۹۔ کے سلسلے میں مقامی آبادی، مقامی رہنمائون اور لوکل گورنمنٹ کے ساٹھ ربطہ کے لیے حکمت عمل مرتب کی جائے۔

کووڈ۔۱۹ وبائی امراض اور صحت سے متعلق حفاظتی اقدامات

Annex G: Tree Plantation Plan

Tree plantation plan is the most effective, economical and useful remedy for control of environmental pollution. Besides, it is the cheapest way of landscape improvement. Trees have innumerable direct and indirect benefits of supplying timber and fuel at maturity. During their life time, they supply fodder, fruits, seeds, help in controlling soil erosion and water conservation, offer shade and are oxygen producing industries to combat ever increasing air pollution. Big foliage trees also help in reducing noise and dust pollution.

Objectives of Tree Plantation:

The main objectives of planting along the road are as follows:

- To provide for aesthetic an enhancement of the project corridor from Machli Chowk to KANUPP (5.9km).
- To compensate the number of bushes and trees, those plants species will be cut down during the rehabilitation of road.
- To improve the existing green belt at the project corridor.
- To reduce the impacts of air pollution and dust, as trees and shrubs are known to be natural sink for air pollutants.
- To provide much needed shade on glaring hot roads during summer.
- To reduce the impact of ever increasing noise pollution caused due to increase in number of vehicles.
- Prevention of glare from the headlight of incoming vehicles.
- Climatic amelioration.
- Moderating the effect of wind and incoming radiation.
- Compliance with national programs and international conventions/treaties.
- Avoid greenhouse gas emissions and negative impacts on local ecosystems and livelihoods.
- Step towards preservation and conservation of Natural Environment.

-

Sub Project Location:

The proposed sub-project starts at Machli Chowk and ends at KANUPP Gate, Hawksbay area, Karachi. Sub project is shown in **figure 1.**

Coastal road (road from Gulbai to Hawksbay road) including Paradise point are devoid of tree growth except few scattered trees in front of KANUPP. The soil and water quality of coastal roads (road from Gulbai to Hawksbay road) are saline in nature due to their location along the coast of sea[14].

[14] *Comprehensive Plan-Final Report of Forestation, Aesthetic Plantation and Landscaping For Karachi, 2008.*

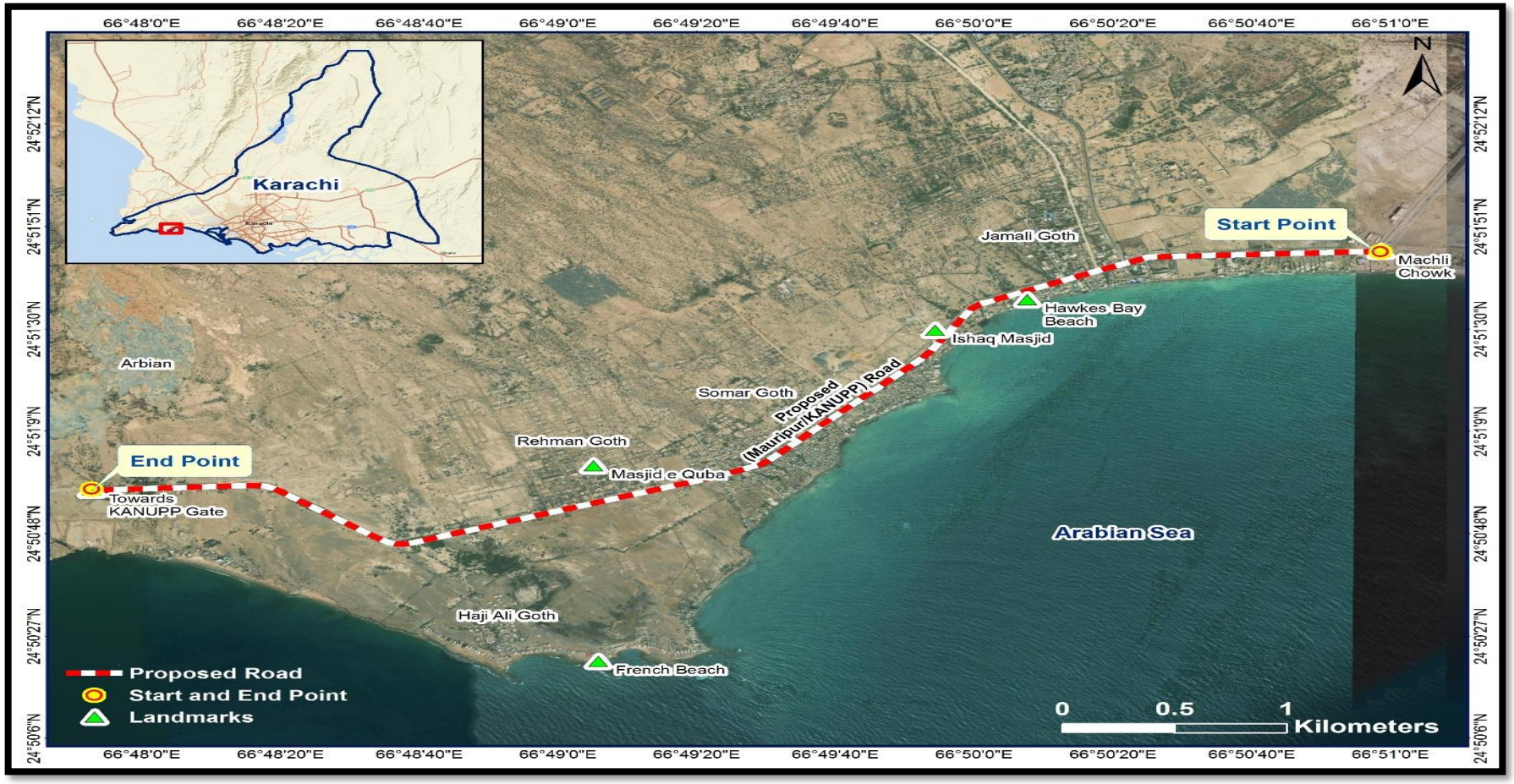

Figure 1: Location Map of Machli Chowk Road to KANUPP

Existing Flora Species at Sub project site:

-

Surrounding land of the sub-project area is mostly covered with scattered natural vegetation of *Prosopis juliflora* and *Acacia nilotica* species. Meanwhile, scattered and sporadic species of *Calotropis procera* and *Duma florulenta* were observed at project site.

Median of road is covered with scattered natural vegetation of *Prosopis juliflora, Acacia nilotica* species and dense planted trees of *Conocarpus erectus*. Meanwhile, median of road is covered with sporadic and scattered species of *Calotropis procera, Duma florulenta* and planted trees of roughback lignum vitae. Meanwhile three planted trees of *Phoenix dactylifera L.*were observed infront of Jamali beach hotel.

In the ROW of the project, bushes of *Prosopis juliflora* will be removed from the project site and few species of *Acacia nilotica* (which is fall in least concern category of IUCN Red list 2021).

Practices:

This is important to have a look at the practices of developing plantations, various aspects of this development has been undergone consideration, and almost a typical model for developing green belt has been depicted in the images given below. This is to notice that the standers are varying and have been developed considering various aspects of such plantations.

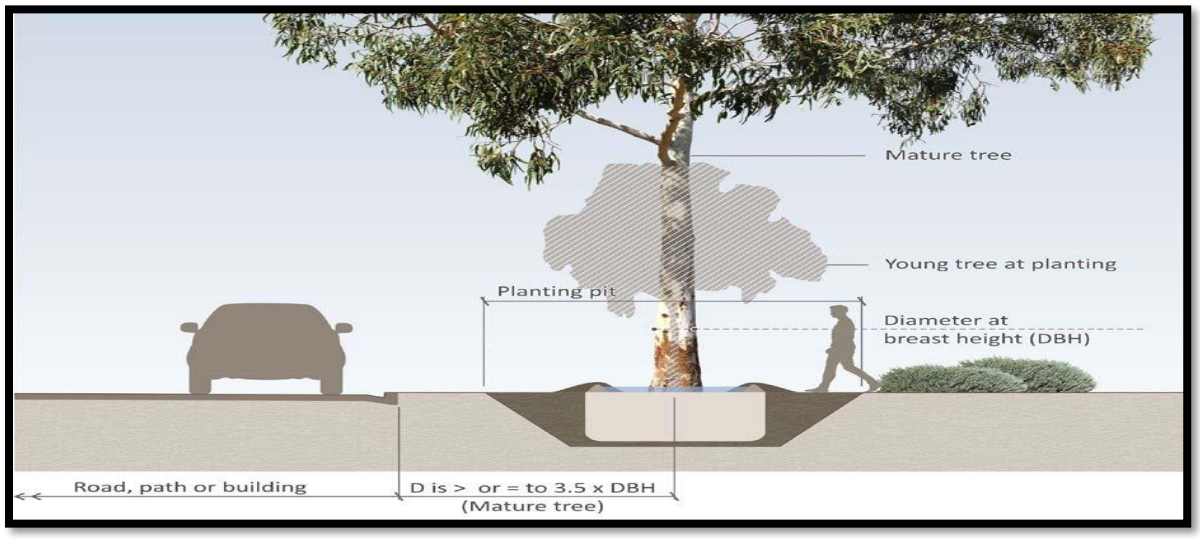

Figure 2: Recommended Standard of Green Zone

1. Proposed Cross Section for Sub project:

Proposed cross section for the sub project is shown in **figure 3**. Proposed median for the sub project is 1.8 meters, which will be utilized for the tree plantation.

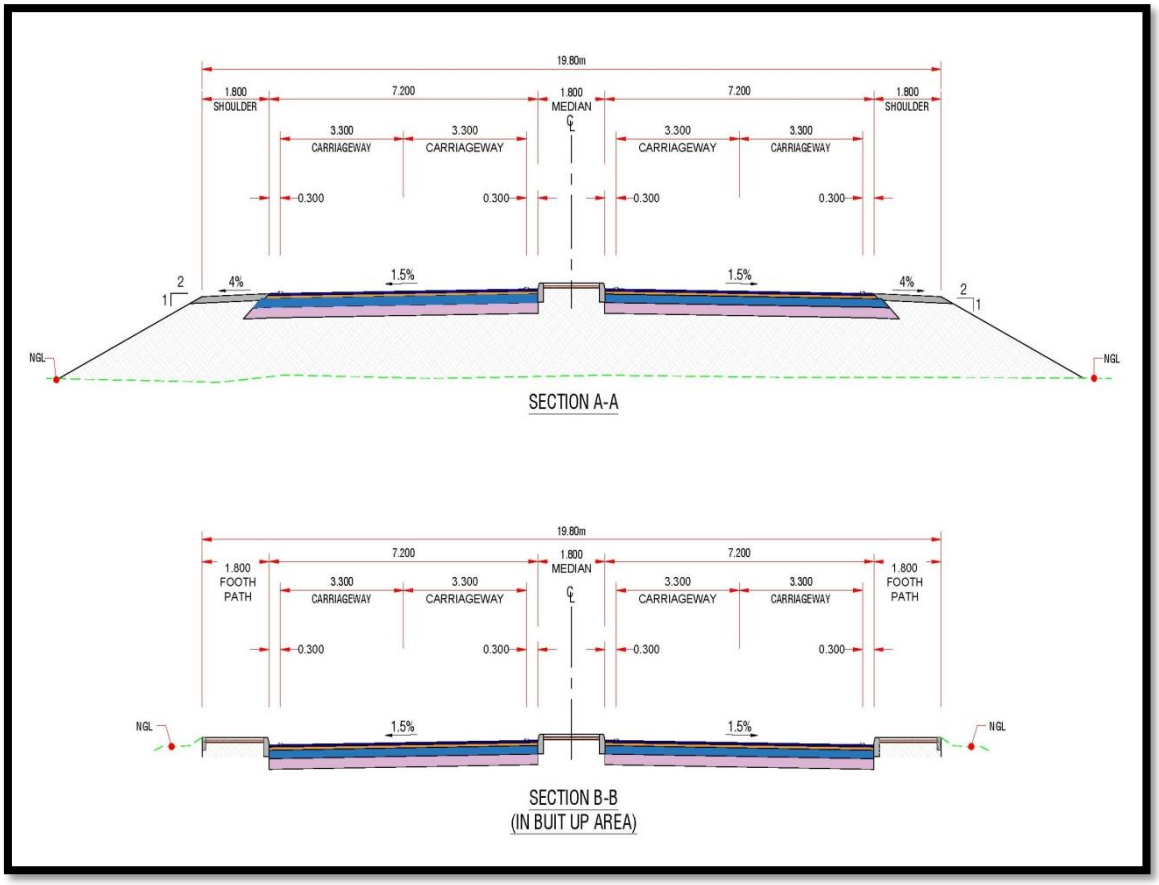

Figure 3: Cross section area of proposed project

Selection of Tree Species for Landscaping:

Trees and shrubs have been used to enhance the soft natural ambience against harsh elements in most of the enhancement schemes. The planting species are decided based on the physical growth characteristics of trees.

The selection of plant types and planting arrangement should be based on the following considerations:

- Shape (spread of the tree) and size
- Texture and color of foliage/flower/fruits in different seasons and stages of growth.
- Adaptability and suitability to agro-climatic regions/zones
- Growth rate (slow/fast) average age of maturity and replacement cycle
- After care and maintenance required for sustenance and growth
- Economic and other social/recreational benefits

Plantation pattern will be worked out as follows:

- Planting of trees on the median of road.
- Planting of shrubs on the median of road.
- Turfing with grass on the median of road.

-

Specifications and Statistical Analysis of the Plantation Area:

Considering the physical limits of sub project *(Rehabilitation of Existing Road from Machli Chowk to KANUPP, 5.9km),* following a planting scheme will be followed:

- Proposed project road is 5.9 km; meanwhile existing median of green belt is present on approximately 4.94 km in the three patches (patch1=2.94 km, patch 2=1.1km and patch 3=0.9km) of road.
- Existing green belt of 4.94 km will be enhanced with the help of proposed plants species.
- 1km =1000meters; 4.94 km=4940m.
- One row will be prepared due to limitation of green belt area.
- Spacing between plant species to plant species should be 3m.
- Size of pits should be 2 cft/ plant species.
- Required quantity of plant species=4940/3=1646.
- Total number of 1646 plants will be required to improve the green belt.
- Height of the saplings at the time of planting should be more than 2m.
- Median of the road will be covered with grass trufing.
- Combination of Proposed Trees and Shrub species should be utilized on the median of road.
- Total approximately quantity of 1646 Plants should be planted on the median of road.
- 7 different species of plants will be utilized for the plantation.

Proposed Plants Species:

Proposed species for the purpose of turfing/ground cover on the median of road are *Cynodon dactylon and Opheopogon grass.* The flexibility of range is given to facilitate keeping in mind of growing seasonal demand and availability of stocks in the local market. However, other suitable and local market easily available species may be planted in consultation with the local horticulture specialists.

The Tree species on the median of road will be *Phoenix dactylifera, Guaiaceum officinale, Delonix regia, Azadirachta indica and Polyalthia longifolia*. The flexibility of range is given to facilitate keeping in mind of growing seasonal demand and availability of stocks in the local market. However, other suitable and local market easily available species may be planted in consultation with the local horticulture specialists.

The shrub species on the median of road will be *Hibiscus rosa-sinensis and Bougainvillea*. The flexibility of range is given to facilitate keeping in mind of growing seasonal demand and availability of stocks in the local market. However, other suitable and local market easily available species may be planted in consultation with the local horticulture specialists.

Table1: Proposed Plant Species with their Respective Quantity

S. No.	Scientific name of Species	Local Name of Species	Total Quantity
1	*Phoenix dactylifera*	Date Palm	235
2	*Guaiaceum officinale*	Lignum Vitae	235
3	*Delonix regia*	Gul Mohar	235
4	*Azadirachta indica*	Neem	235
5	*Polyalthia longifolia*	Ulta Ashok	235
6	*Hibiscus rosa-sinensis*	China rose	235
7	*Bougainvella*	*Bougainvillea glabra*	236
Total Quantity of Plants			1646

Water Requirement For Trees:

Watering plants on daily basis will be mandatory because of the soil conditions. On average 2 liters of water will be required for the survival of trees.

Implementation Schedule:

We have two seasons to initiate plantation work:

1. Spring plantation – Starting from Feb 15 until April 15
2. Monsoon plantation- Starting from July 15 until September 15

The plantation work done during above mentioned periods have more chances of success and the operation would be more cost effective; furthermore post plantation carries of utmost importance, and has been considered as deriving force for success.
The schedule of watering and care needs to be intensive in the beginning phase and off course requires regular attention, any step over ruled or escape could jeopardize the process and does not allow any chance to of correction and then the process needs to get start from zero.

Protocols To Be Followed:

I- Developmental Phase

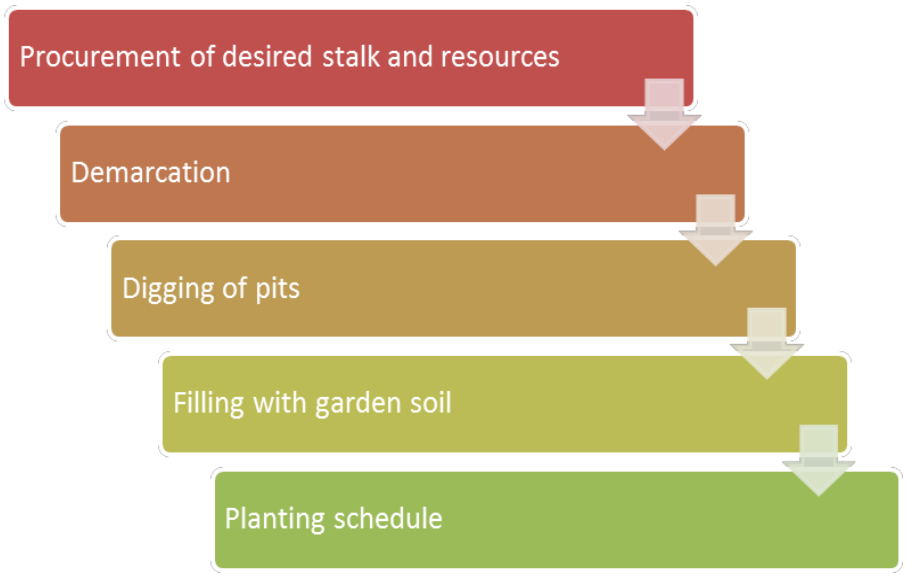

Figure 4: Developmental protocol for plantation

II- Operational Phase:

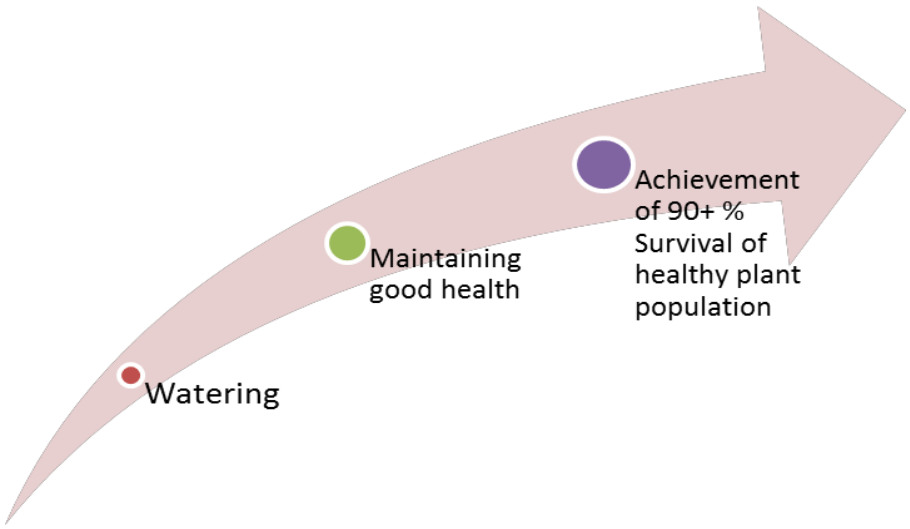

Figure 5: Operational phase of plantation.

Specific Measures For Proposed Species:

Specific measures for proposed species are shown in the table No. 2.

-

Table 2: Specific Measures for the Proposed Species				
S. No.	**Scientific Name of Plant Species**	**Common Name of Plant Species**	**Description**	**Picture**
1	Phoenix dactylifera	Date palm	➢ It withstands coastal exposure and tolerates drought. ➢ Grows with an upright habit up to 50-80 ft. tall (15-25 m) and 20-40 ft. wide (6-12 m). ➢ Easily grown in well-drained soils in full sun. Tolerant of a wide range of soil conditions, as long as they are well drained. Hot dry conditions are required for free fruiting, the fruit not forming very readily in cooler or moister climates ➢ No serious disease or pest issues. ➢ Needs no regular pruning.	
2	Guaiacum officinale	Lignum Vitae	➢ Guaiacum officinale is an evergreen Tree growing to 10 m (32ft) by 10 m (32ft) at a slow rate. ➢ Suitable for: light (sandy), medium (loamy) and heavy (clay) soils and prefers well-drained soil. Suitable pH: acid, neutral and basic (alkaline) soils and can grow in saline soils. ➢ It cannot grow in the shade. It prefers moist soil and can tolerate drought. The plant can tolerate maritime exposure.	

3	*Delonix regia*	Gul Mohar	➢ In summer the flame tree needs a lot of water. Water when the soil gets dry but take good care not to overwater the flame tree. ➢ Growing rates are higher in trees exposed to direct sunlight, in areas of medium to lower altitudes and annual rainfall above 700 mm. ➢ Another thing that is a factor is the size that it grows to. This plant can grow up to five feet per year and so matures and develops pretty fast. Give it some room, and it will blossom to be the pride of your garden. As for maintenance, prune the plant carefully and regularly during the initial growth stages. Later on, this won't be much of an issue.	
4	*Azadirachta indica*	Neem	➢ The Neem grows on almost all types of soils including clayey, saline and alkaline soils, with pH up to 8.5, but does well on black cotton soil and deep, well-drained soil with good sub-soil water. ➢ Neem tree needs little water and plenty of sunlight. ➢ Young neem plants cannot tolerate intensive shade, frost or excessive cold. A Neem tree normally begins to bear fruit between 3 and 5 years and becomes fully productive in 10 years.	

			➢ Neem trees require plenty of bright sunlight. The trees benefit from regular moisture, but be careful not to overwater, as the trees won't tolerate wet or poorly drained soil. Allow the soil to dry between every watering. ➢ Feed the tree about once a month in spring and summer, using a light application of any good quality, balanced fertilizer or dilute solution of water soluble fertilizer.	
5	Polyalthia longifolia	Ulta Ashok	➢ Well-drained and organic soil. Average. Warm. Fertilize 3 times a year in spring, summer, and autumn – with a top-quality granular fertilizer.	
6	*Hibiscus rosa-sinensis*	China rose	➢ Apply the fertilizer during the spring and summer months. ➢ Pruning the Hibiscus rosa-sinensis helps maintain a small size and encourages a fuller, bush-shaped plant.	

7	Bougainvella	*Bougainvillea glabra*	➢ To grow bougainvillea, plant it in full sun, slightly acidic and well- drained soil, and a relatively hot and dry climate. ➢ Pruning of bougainvillea should be done on a monthly basis as it consists of thrones which can be a safety hazard.	

Recommendation:

Following recommendation will be undertaken:

- Tree watering is a key part of tree care, but it is difficult to recommend an exact amount due to the variety of climates.
- Proper pruning technique is important for a healthy tree.
- Inventory of removed trees, including their sizes and species should be recorded.
- Contractor will be ensured the plantation of 5 trees against one tree cut.
- Record of number of trees planted and their survival rate.
- It is proposed that the owners of huts may be organized, mobilized and properly guided to plant trees, shrubs and flowering plants in front of these huts and maintain them properly. In this way the overall vegetation cover could be increased for beautification and improvement of environment of coastal areas.

Annex H: 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 D.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 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. - 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	E&S Team of Contractor / Sub-contractor -	- Visual Inspection	During construction	Focal Person of LC, ESS and Supervision Consultant

contained in covered bins and disposed of on a frequent basis to avoid attracting wildlife. - 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	- E&S Team of Contractor / Sub-contractor / -	- Visual inspection	- Pre and During Construction of the sub-project -	- Focal Person of LC, ESS and Supervision Consultant

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. - • Storm water flows will be directed away from hazardous material storage areas. - • Equipment and work areas will be regularly inspected for signs of leaks and spills. Spill containment and cleanup kits will be available wherever hazardous materials will be used or stored. Any incidental spills or leaks will be 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 I: 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.

1. Assigning the Role of a Focal Person as the Grievance Officer

   The Focal Person from the LCs 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.

2. 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.

3. Initial Review, Examine, and Investigate the complaint/grievance

- Once the grievance is received and recorded, the Grievance Officer shall identify the LCs, 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.

4. 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.

5. 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 LCs, 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 LCs
- 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 LCs.

- 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 LCs. 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.

Annex J: NOC from SEPA

Reference No: SEPA/ RO(K)/DK/E.Z/09/837/2021

SINDH ENVIRONMENTAL PROTECTION AGENCY
GOVERNMENT OF SINDH

HEAD OFFICE:
Plot # ST-21 , Sector-23,Shan Chowrangi,
Korangi Industrial Area, Karachi.
Ph:35065950, 35065598, 35065532
epasindh.gov.pk
Facimile:35065940

August 16th, 2021

Subject: **DECISION ON ENVIRONMENTAL SCREENING (THROUGH CHECKLIST)**

1	**Name & address of Proponent**	:	Dr. Muhammad Kashif Khan, The Deputy Program Director, Competitive & Livable City of Karachi Local Government Department, Government of Sindh
2	**Description of project**	:	Rehabilitation of Machli Chowk to Kanupp Road Scheme
3	**Location of Project**	:	Keamari, Karachi
4	**Date of Filing of Checklist**	:	10-08-2021

After careful review and analysis of Environmental Screening through Checklist report of **"REHABILITATION OF EXISTING MACHLI CHOWK TO KANUPP ROAD, KARACHI** Sindh Environmental Protection Agency (SEPA) accords its approval subject to the following conditions:-

i. All mitigation measures recommended in ESMP report shall be complied with, for achieving negligible impacts on physical, biological, environmental and socio-economic resources of the area. Sindh Environmental Quality Standards (SEQS) for ambient air quality, noise and wastewater shall be followed in letter and spirit. Discharging and dumping of any kind of construction waste material along the roads will not be allowed.
ii. Access should be provided during construction period to the people including students, commuters, transporters etc.
iii. Dust emission from soil and aggregate storage stockpiles, dirt roads and diversion routes will be reduced by appropriate measures. These may include: (i) Keeping the material / surface moist by sprinkling of water at appropriate frequency, (ii) Erecting windshield walls on three sides of the piles such that the wall project 0.5 m above the pile, or, (iii) Covering the pile, for example with tarpaulin or thick plastic sheets, to prevent emission. Water will be sprinkled daily or when there is an obvious dust problem on all exposed surfaces to suppress emission of dust. Frequency of sprinkling will be kept such that the dust remains under control, particularly when wind is blowing towards the community.
iv. Use of appropriate construction techniques will be adopted during construction of sublevel parking space at Shahrah-e-Kamal and measures for securing and protecting excavation site from collapse and falling of objects.
v. Project management will ensured that the construction site is appropriately cordoned off with hard barricade.
vi. Proponent will prepare an adequate traffic management and rerouting plan to ensure smooth flow of traffic. Information will be provided to the public through electronic & print media well in advance for all the diversions & detours planned during the construction.
vii. Project management will ensure that an adequate storm water drainage system shall be in place during construction to avoid accumulation of storm water on subproject road.

viii. Solid waste generated during construction will be sent to designated disposal sites. A comprehensive waste disposal plan would be developed to effectively manage all wastes.

ix. Project management will ensure that existing wearing and base course scrap of roads be reused in sub-base course of the new roads or disposed at KMC designated Landfill site via tarpaulin covered dump trucks.

x. Proponent will undertake compensatory tree plantation in case of tree cutting. Native species of trees will be planted.

xi. It shall be ensured that protected heritage buildings will not be introduced and construction activities should avoid these sites to be encroached upon.

xii. Public awareness of the construction activities will be provided using signage, which will indicate that construction is in progress. These signs will be placed at appropriate intervals along the construction alignment.

xiii. Proponent will constantly coordinate and consult the construction plan, schedule with all the relevant civic and utility agencies for rehabilitation of their facilities/network in order to minimize the difficulties of the commuters and the citizens. The subproject will be constructed in the minimum possible time and will not be left abandoned or unattended at any stage from the commencing day till the completion day.

xiv. Continuous monitoring of environmental and social parameters will be done as per monitoring plan which should comply with Sindh Environmental Quality Standards (SEQS) same will be submitted to Sindh EPA on ***monthly basis***.

xv. Project Proponents/Supervision Consultant will appoint an Independent Monitoring Consultant (IMC) whose responsibility shall be to monitor the compliance of Environmental and Social Monitoring Plan as laid down in ESMP. The IMC shall ensure that the activities at project site are undertaken in environment friendly manner and the mitigation measures are implemented as per the recommendations of ESMP. The proponent shall be liable to submit quarterly monitoring reports produced by IMC to Sindh EPA. The report shall include pollutants measurement and analysis reports along with photographic records showing therein the environmental and social conditions at site during the construction of subproject.

xvi. Proponent will ensure Grievance Redress Mechanism proposed for subproject implementation follow in letter and spirit and cater all subproject beneficiaries.

xvii. This approval shall be treated as null and void if the conditions mentioned in this approval are not complied with or any violation of SEP Act, Rules, Regulations, Guidelines and instructions there under is committed by the proponent or his/her agent or employee.

xviii. In case of misrepresentation/ concealment of facts this approval will be withdraw/ cancelled. At any stage, if it is proof that submitted documents or false incorrect the said decision on EC will also be treated cancelled without giving any notice from this Agency.

xix. That the proponent shall submit undertaking for compliance of conditions mentioned in this approval.

xx. No violation of any Rules, Regulations & Provisions of SEP Act-2014 shall be made.

xxi. The approval is accorded only for the project activity described in the ESMP report. Proponent shall submit separate report as required under regulation for any enhancement or change in the design of project.

xxii. Sindh EPA at any stage reserved the right to issue instruction for an independent audit.

xxiii. This approval is not valid for any Court matter/dispute.

xxiv. This approval does not absolve the proponent of the duty to obtain any other approval or consent that may be required under any law in force.

This approval issued with the approval of Director General SEPA, Karachi.

Deputy Director (Lab.)

Annex K: Sindh Environmental Quality Standards (SEQS)

Sindh Environmental Quality Standard for Ambient Air			
Pollutant	**Time-weighte**	**Concentration in**	**Method of measurement**
Sulfur Dioxide	Annual	80 μgm^3	Ultraviolet Fluorescence Method
	24 hours**	120 μgm^3	
Oxides of Nitrogen as (NO)	Annual	40 μgm^3	Gas Phase Chemiluminescence
	24 hours**	40 μgm^3	
Oxides of Nitrogen as (NO2)	Annual	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	360 μgm^3	High volume Sampling, (Average flow rate not
	24 hours**	500 μgm^3	
Respirable Particulate Matter (PM10)	Annual	120 μgm^3	B Ray absorption method
	24 hours**	150 μgm^3	
Respirable Particulate Matter	24 hours**	75 μgm^3	B Ray absorption method
Lead (Pb)	Annual	1 μgm^3	ASS Method after sampling using EPM 2000
	24 hours**	1.5μgm^3	
Carbon Monoxide (CO)	8hours**	5mg/m^3	Non Dispersive Infra Red (NDIR) method
	1hours	10mg/m^3	

***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)	55	45
2	Commercial area (B)	65	55
3	Industrial area (C)	75	65
4	Silence Zone (D)	50	45
Note: 1	Day time hours: 6.00 a. m to 10.00 p. m		
2	Night time hours: 10.00 p. m to 6.00p. 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		
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		

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	oC
2	pH value (H^+)	6-9	6-9	6-9	
3	Biological Oxygen Demand (BOD)5 at 200C	80	250	80	mg/l
4	Chemical Oxygen Demand	150	400	400	mg/l
5	Total Suspended Solids (TSS)	200	400	200	mg/l

Sindh Environmental Quality Standard for Municipal & Liquid Industrial Effluents					
S. #	Parameter	Into Inland	Into Sewage	Into Sea	unit
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 (NH3)	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	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)		
Paramet	Standards (maximum	Measuring method
Noise	85dB(A)	Sound-meter at 7.5meter from the source

Sindh Environmental Quality Standards for Drinking Waters (mg/l)					
S.#	**Properties / Parameters**	**Standard Values for Pakistan**	**S.#**	**Properties /**	**Standard Values for**
Bacterial			Chemical		
1	All water intended for drinking (E.Coli or Thermo tolerant Coliform bacteria)	Must not be detectable in any 100 ml sample	Essential Inorganics (mg/liter)		
			3	Aluminum (Al) mg/l	≤ 0.2
			4	Antimony (Sb)	≤ 0.005
2	Treated water entering the distribution system (Ecoli or thermo tolerant coliform and total	Must not be detectable in any 100 ml sample	5	Arsenic (As)	≤ 0.05
			6	Barium (Ba)	0.7
			7	Boron (B)	0.3
3	Treated water in the distribution system (E.coli or thermo tolerant coliform and total	Must not be Detectable in any 100 ml sample. In case of large supplies, where sufficient samples are	8	Cadmium (Cd)	0.01
			9	Chloride (Cl-)	< 250
			10	Chromium (Cr)	≤ 0.05
			11	Copper (Cu)	2
			Organic (mg/L)		

Sindh Environmental Quality Standards for Drinking Waters (mg/l)					
S.#	**Properties / Parameters**	**Standard Values for Pakistan**	**S.#**	**Properties / Parameter**	**Standard Values for Pakistan**
Bacterial			Chemical		
		resent in 95% of the samples taken throughout any 12 month period.	12	Phenolic compou	<0.0002
			Toxic Inorganics (mg/liter)		
			13	Cyanide (CN)-	≤ 0.05
			14	Fluoride (F)	≤ 1.5
			15	Lead (Pb)	≤ 0.05
			16	Manganese	≤ 0.5
Physical			17	Mercury (Hg)	≤ 0.001
4	Color	< 15 TCU	18	Nickel (Ni)	≤ 0.02
5	Taste	Non objectiona	19	Nitrate (NO3)-	≤ 50
6	Odor	Non objectiona	20	Nitrite (NO2)-	≤ 3
7	Turbidity	< 5 NTU	21	Selenium (Se)	≤ 0.01
8	Total Hardness as CaCO3	< 500 mg/l	22	Residual Chlorine	0.2-0.5 At consumer end
9	TDS	<1000			
10	pH	6.5-8.5			
Radioactive					
11	Alpha Emitters bq/L	0.1	23	Zinc (Zn)	5.0
12	Beta emitters	1			

Annex L: AED Certificate

SAY NO TO CORRUPTION

GOVERNMENT OF SINDH

OFFICE OF THE DEPUTY COMMISSIONER
DISTRICT KEAMARI-KARACHI

No. DC/Keamari /ADC-I/1605/2021
Karachi. Dated. 30 /08/2021

To,

The (Focal) Person of KMC,
For CLICK Project (KMC),
Karachi.

SUBJECT: ANTI ENCROACHMENT VERIFICATION CERTIFICATE IN CONNECTION WITH REHABILITATION OF MACCHLI CHOWK TO KANUUP ROAD, HAWKSBAY, DISTRICT KEAMARI KARACHI.

Reference:- Your office letter No. FP/Click/KMC/002/2021, dated 27-08-2021,

I am directed to send herewith report in the matter furnished by Assistant Commissioner Sub-Division Maripur, District Keamari Karachi, vide his letter No. AC/MRP/K/K/799/2021, dated 30-08-2021, for information and taking further necessary action in the matter as per law/rules/government policy.

ADDITIONAL DEPUTY COMMISSIONER-I
FOR DEPUTY COMMISSIONER
DISTRICT KEAMARI-KARACHI

Copy to:

1. P.A to Deputy Commissioner District Keamari Karachi.