



INFOTECH SOLUTIONS & CONSULTANTS



DOCUMENT ISSUE AND REVISION RECORD

This document and its contents have been prepared and intended solely for the information and use the Sindh Irrigation Department, Government of Sindh concerning the **SINDH FLOOD EMERGENCY REHABILITATION PROJECT (SFERP)**

Document History

Project Name:	Sindh Flood Emergency Rehabilitation Project (SFERP) – Additional Financing
Proponent	Sindh Irrigation Department, Government of Sindh
Document Title	SFERP – EIA for Construction of Flood Detention Dam at Mazarani Stream
Prepared By	InfoTech Solutions and Consultants
Procurement Status	Not initiated yet.
Date	01-Nov-2024

Revision	Description	Originated	Checked	Reviewed	Authorized	Date
1.0	For the World Bank review	Dr. Muhammad Farhan, Dr. Mariam Zehra, Dr. Moin Peerzada	Dr. Umair Bin Zamir	Nasir Ali Panhwar, Wajai Kumar, Marvi Baloch, Taha Khokar	Jawed Ahmed Memon	02-11-2024

LIST OF ABBREVIATION

BP	Bank Policy
BOQ	Bill of Quantity
CoI	Corridor of Impacts
CSC	Construction Supervision Consultant
EC	Electrical Conductivity
ECA	Employment of Child Act
EIA	Environmental Impacts Assessment
EHS	Environmental, Health, and Safety
EMP	Environmental Monitoring Plan
EPA	Environmental Protection Agency
ESIA	Environmental and Social Impacts Assessment
ESF	Environmental & Social Framework
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
GBV	Gender Based Violence
GoS	Government of Sindh
GRM	Grievance Redress Mechanism
IEE	Initial Environmental Examination
IPF	Investment Project Financing
IUCN	International Union for Conservation of Nature
P&DD	Planning and Development Department
PC-I	Pakistan Planning Commission Form – 1 Appraisal of Development Project
PD	Project Director
PDMA	Provincial Disaster Management Authority

PEPC	Pakistan Environmental Protection Council
pH	Power of Hydrogen
PID	Project Information Document
PIU	Project Implementation Unit
PKR	Pakistani Rupee
RAP	Resettlement Action Plan
SEA/SH	Sexual Exploitation and Abuse / Sexual Harassment
SEPA	Sindh Environmental Protection Agency
SEQS	Sindh Environmental Quality Standards
SFERP	Sindh Flood Emergency Rehabilitation Project
SID	Sindh Irrigation Department
SRP	Sindh Resilience Project
VAC	Violence Against Child
WB	World Bank

1.EXECUTIVE SUMMARY

The Sindh Flood Emergency Rehabilitation Project (SFERP) aims to enhance flood protection infrastructure, improve the irrigation and drainage network, and repair small dams. Additionally, it involves the construction of new small flood detention dams/weirs to mitigate damages caused by flash floods. The project is expected to safeguard more than 12 million people, 1.81 million homes, and 3.77 million acres of crops from the impact of torrential floods.

The project comprises five main components: Infrastructure Rehabilitation (Component 1), Livelihoods Support (Component 2), Institutional Strengthening for Resilience and Technical Assistance (Component 3), Project Management and Operational Costs (Component 4), and Contingent Emergency Response (Component 5).

The Environmental Impacts Assessment (EIA) specifically addresses the environmental and social impacts and mitigation strategies related to Component 1: Infrastructure Rehabilitation. This component includes the construction of flood protection infrastructure i.e. the Construction of Flood Detention Dam at Mazarani Stream. The proposed Flood Detention Dam at Mazarani Stream, with a dam height of 32 feet and embankment length of 2920 feet, is designed to capture and store rainwater. Situated on government-owned land, the project will involve 163 labors. There is one camp in which 25 percent of the total labor will reside. The project aims to protect nearby communities from flood and recharge groundwater, providing a reliable water source and supporting regional development.

The initial screening criteria indicated that the project interventions can potentially pose moderate levels of environmental and social risks, which will be temporary and reversible without lasting effects on the project areas. The EIA has been developed in consultation with the World Bank safeguards team to meet the moderate-risk category sub-project requirements. The proposed construction work fall within the purview of Schedule-II. Therefore, Initial Environmental Examination (IEE) was conducted, and a report will be presented to SEPA to obtain NOC from the authorities before the initiation of construction activities.

The Environmental and social baseline of the sub project areas were established by analyzing the surface and ground water quality along with ambient air quality and noise levels. The baseline environmental quality testing data shows all parameters remain within specified limits as outlined in the SEQS. The sub project site did not confine any indigenous or endangered species of flora and fauna and the sites were not in proximity to any protected areas or wildlife sanctuaries.

The environmental sampling within the sub-project area was carried out by M/S Ducom Pakistan laboratory, which hold approval from the Sindh Environmental Protection Agency (SEPA). The collected samples underwent testing following the Sindh Environmental Quality Standard - 2016 (SEQS).

The sub-project area falls within Zone 2B with peak ground acceleration ranging from 0.16 to 0.24 g. The peak temperature reaches 40°C during April, May and June. The peak rainfall ranging from 1.57 to 2.36 inches.

The surveys and consultations were carried out in different villages/settlements with the purpose of establishing a social baseline for the designated project area. The selection of villages was predicated on their strategic location within the primary corridor of impact, anticipating direct effects on the sub-project. Community representatives and key stakeholders expressed profound appreciation for the Sindh Irrigation Department's proactive stance in undertaking initiatives. According to community residents, the proposed sub-project hold immense potential to safeguard their homes, preserve livelihood sources, and mitigate the risk of displacement, ultimately contributing to poverty reduction.

The sub-project screening involved a checklist to address environmental and social issues, with field surveys conducted to fill individual checklists. The environmental and social concerns noted during surveys were considered in the preparation of the EIA. The major rehabilitation works will be limited to the RoW, and no public infrastructure or commercial activities were observed to exist within this zone. Indirect impacts were evaluated within a 500 ft buffer zone, and no archaeological sites, physical cultural resources, or graveyards likely to be affected by construction activities were observed within proximity to the sub-project sites. While socially sensitive receptors like mosques, schools, basic health units, and graveyards may be indirectly impacted during the construction phase. Such indirect impacts will be temporary and reversible with low significance when appropriate mitigation measures shall be adopted.

No trees would be removed to facilitate the construction activities. To facilitate this activity, a tree inventory will be prepared before the start of construction activities. No protected forests or endemic/endangered species of flora and fauna were reported in the sub-project area during the field survey.

A spillway has been provided as the first line of defense to ensure the safety of the proposed Dam. The spillway has been designed to safely discharge excess floods up to the 100-yr flood with a freeboard of 5 ft. The freeboard has been set considering the reservoir fetch length and corresponding wave height. The study of dam break was conducted as a part of the detailed design. It has been concluded from the dam break study, the reservoir area of flood detention

dam is 248 acres and the area inundated in a dam breach scenario is 6.16 sq. mile or 15.95 sq. km.

To ensure occupational health and safety of the construction workers, a comprehensive approach has been adopted. This includes continuous inspections to prevent diseases and accidents, raising awareness among both labor and the community, implementing sanitation measures, establishing emergency response and rescue procedures, and providing adequate sanitary facilities, potable water, and garbage bins for workers. These initiatives align seamlessly with the Labor Management Procedures specifically designed for the Sustainable Flood Emergency Reconstruction Project (SFERP).

The primary responsibility for executing the SFERP project and the current Environmental Impacts Assessment (EIA) lies with the Project Implementation Unit (PIU-SFERP) within the Sindh Irrigation Department, led by the Project Director. The PIU has enlisted the services of a Construction Supervision Consultant (CSC) responsible for overseeing construction activities. Additionally, the construction contractor will appoint an environmental, social, health, and safety/labor officer to implement mitigation measures and comply with other requirements outlined in the ESMP.

A dedicated budget of Rs 7,365,000/- has been earmarked for the implementation of the ESMP.

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INTRODUCTION





2. INTRODUCTION

During Monsoon 2022, Sindh witnessed extreme rainfall and hill torrents from Kirther Range and Bugti Range of Koh-e-Suleman, resulted in massive flooding in the province. The season brought one of the heaviest rains in Sindh causing overflows and inundations in 24 out of 30 districts (6.18 million acres of land, i.e. over 18% of Sindh's total area). According to Pakistan Meteorological Department (PMD), Pakistan has experienced one of its wettest monsoon seasons in 2022 since 1961. While the national deviation is 175% above the normal, Sindh experienced rainfall that is 426% above the normal precipitation (Figure 1).

The situation during flood 2010 was much alike but in 2022 both right and left banks of Sindh Province were simultaneously affected, hence resulted in large scale human disturbance. The death toll was 823 while 8,422 injuries and damage to 436,435 livestock also occurred [Source: Sindh PDMA Report, 2023]. Over 12.36 million people were affected, 7.38 million people were displaced, and over 2 million houses were damaged. 3.78 million acres crop, approximately 8,500 kms road network, 165 road bridges were damaged. In monetary terms, the damage and loss to economy were estimated to be Rs. 2.38 trillion (USD 9.07 Billion) and Rs. 2.98 trillion (USD 11.38 Billion) respectively [Source: Pakistan Economic Survey 2022-2023].

The 2022 flood in Sindh was a historic event marked by record-breaking precipitation across the province. This extreme rainfall, compounded by water flows from Balochistan and flooding in the River Indus, overwhelmed the region's inadequate drainage systems. The resulting deluge severely damaged flood protection bunds, canals, regulators, drains, and small dams, particularly on the Right Bank, where multiple breaches occurred, including an 800-foot breach in the Flood Protection Bund. Manchar Lake, the ultimate disposal points for floodwaters on the Right Bank, also suffered significant damage due to wave-wash and man-made relief cuts. The Left Bank's limited drainage capacity was similarly exposed, leading to urban flooding in major cities like Karachi, Hyderabad, Sukkur, and Larkana.

Relief operations further strained the irrigation canals, which were already overburdened, causing excessive siltation and breaches. Many regulators were damaged or collapsed, necessitating immediate rehabilitation to restore irrigation water supply. The existing drainage system, designed for a low return period of five years, proved inadequate against the magnitude of the 2022 floods. Recommendations include designing the drainage system for a 10-20 year return period and strengthening the Left Bank's drainage capacity with additional pumping facilities and reviving old water channels (dhoras) to divert floodwaters. Moreover, the escape channels, similar to gravity drains, require enhanced pumping capacity to manage high flows during peak flooding in the River Indus. For more information on the objectives of SFERP and their ongoing projects, please visit sferprrigation.gos.pk.

For the rehabilitation of the damages caused due to the floods of 2022, a meeting between The Country Director World Bank and Hon'ble Chief Minister Sindh was held on September 5, 2022 wherein on the request of Hon'ble CM Sindh, the World Bank offered financial assistance for the rehabilitation through Sindh Flood Emergency Rehabilitation Project (SFERP) for irrigational and drainage infrastructure and flood protection on high-risk streams through cascade of flood detention dams.



Following the World Bank's concept of "Build Back Better", the project is effective since January 10, 2023 with planned closing on December 31, 2027. Owing to its fast-paced progress, the Infrastructure Rehabilitation Component of the project is expected to be completed by August 30, 2024. It is worth to mention that there are several high-priority works, which couldn't be taken up in SFERP (Phase-I) due to financial constraints from Donor Agency.

In the Portfolio Review for World Bank Financed Projects in Sindh, Hon'ble Chief Minister Sindh requested Country Director World Bank for additional financing to carry out these left-over works damaged during floods 2022 in the irrigation and drainage network of Sindh. These works include:

- Rehabilitation / Protection of river embankments namely; Larkana Sehwan Bund, Ruk Loop Bund, Sehwan Protection Bund, Suprio Bund, MS Bund (Kot Almo) Bund and its Loop Bunds, and Ketu Bunder Bund.
- Rehabilitation of Surface Drainage Network of Right Bank, East Nawabshah Main Drain, Gajrah Branch Drain, Thatta Drainage System, Sujawal Branch Drain, Darya Khan Drain, Fasadi Wah, and Shikarpur Drainage Network.
- Revival/ rehabilitation of Dhoros, Dhoru Naro/ Hakro Dhoru, Khairwah Dhoru, and Meekaro Dhoru.
- Rehabilitation of Kalri-Baghar Feeder Lower and Darro Branch and their regulators
- Re-Construction of Aral Tail Regulator, Cross Regulator at Mile 36th of Desert Canal, and Head Regulator, Cross Regulator, Outfall Drain and Regulator of Dhoru Puran RD-297, and different Structures, Regulators, and Bund Sluices along Flood Protection (F.P) Bund and Right Bank of Sindh Province.
- Pumping Facility at the Tail of Kandiaro, Chanesar, and Oderolal Escapes
- Construction of one (01) Flood Detention Dam at Malir Nai and one (01) Flood Detention Dam at Mazarani Stream.
- Rehabilitation and Enhancing Capacity of Pumping Stations in Right Bank Drainage System.

This EIA is focused on Construction of Flood Detention Dam at Mazarani Stream

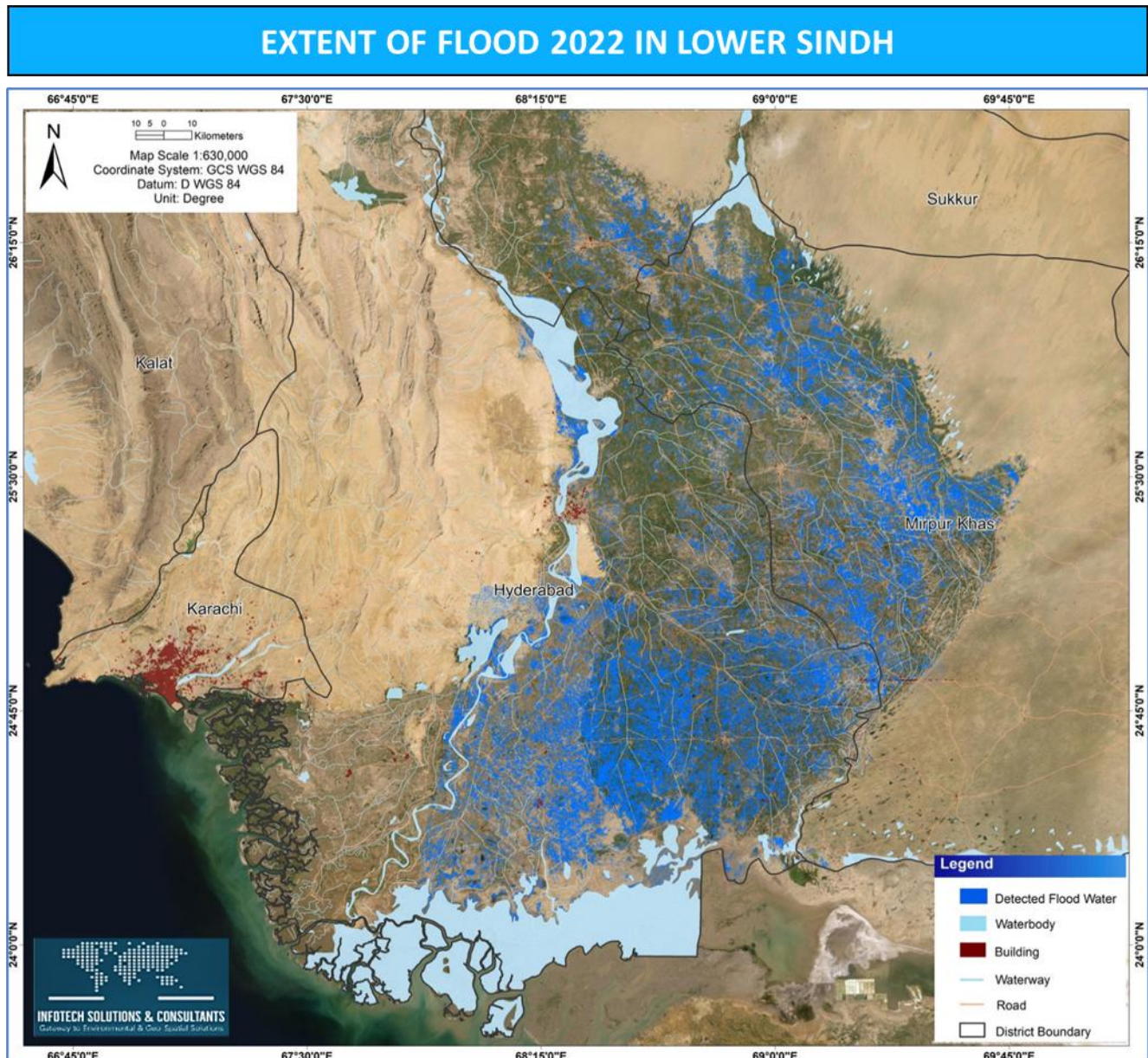


Figure 1: The Extent of Flood 2022 in Lower Sindh

2.1. SFERP Project Components

Main Components of the SFERP Project

The SFERP project comprises the following primary components, with **Figure 2** illustrating the spatial distribution of interventions associated with component - 1.

Component 1: Infrastructure Rehabilitation Works

Component 2: Institutional Strengthening for Resilience and Technical Assistance

Component 3: Project Management

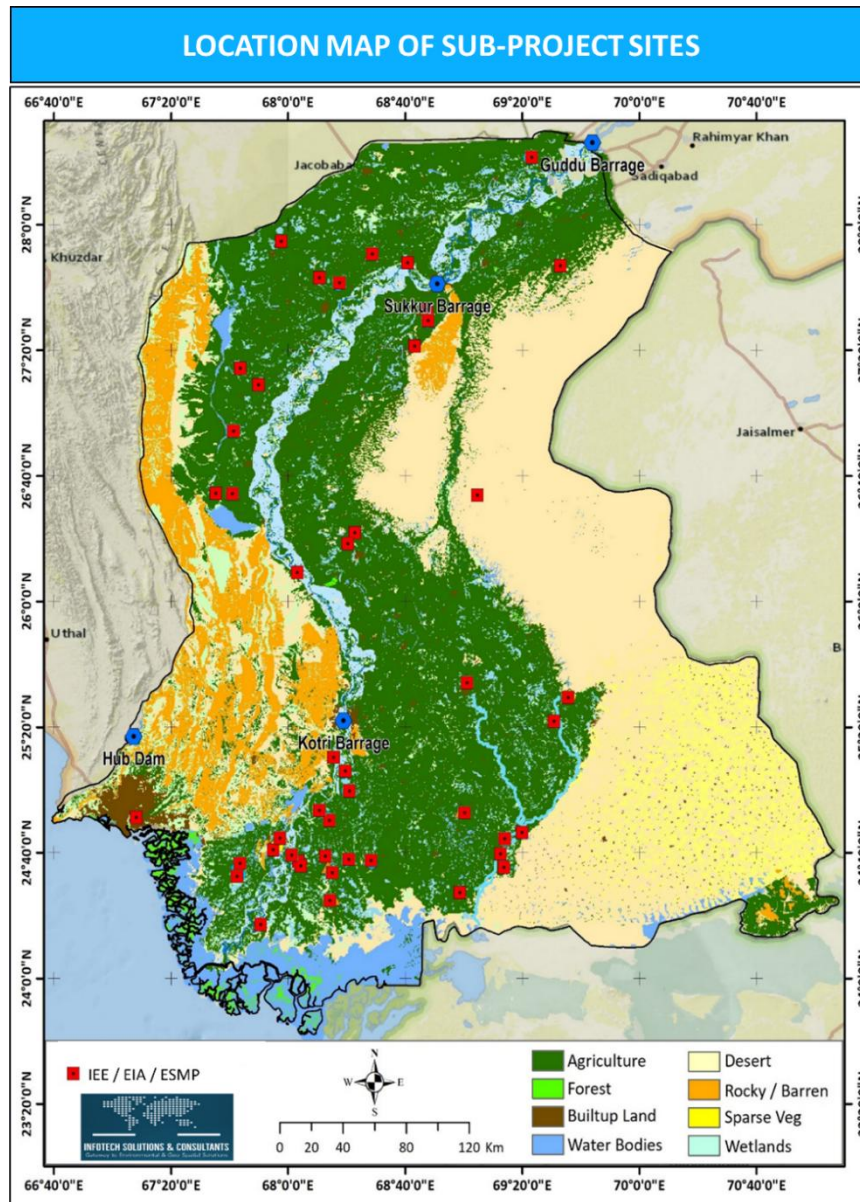


Figure 2: Location Map of Sub-Project Sites

2.1.1. Component-I Infrastructure Rehabilitation

The paramount goal of this component is to elevate physical resilience through the careful restoration, rehabilitation, and enhancement of vital flood protection infrastructure, water supply schemes, roads, and associated infrastructure. An innovative framework approach, deeply rooted in climate resilience, will dictate the meticulous selection of infrastructure subprojects under this component, leveraging insightful damage data. This strategic approach is imperative, driven by the project's pressing and emergent nature.

2.2. The Sub-Project Information

The basic information about the sub-project is presented in **Table 1**.

Table 1: Estimated Cost and Timeline

Sub-project Title: Construction of Flood Detention Dam at Mazarani Stream	
Estimated Cost (Million Rs.)	4900.91
Start/Completion Date	Duration 12 Months

2.2.1. The Sub-Project Site Location

The envisaged Mazarani dam site is located within the rural expanse of District Qambar Shahdadkot. The scheme is located in District Qambar Shahdadkot as delineated in **Figure 4**. The precise coordinates of the site are given in **Table 2**. The pictorial views of dam sites are depicted in **Figure 3**. This proposed undertaking aligns with Component-1's Subcomponent 1.1, focusing on the Rehabilitation/Construction of Irrigation and Flood Control Infrastructure.

The Qambar Shahdadkot district has a well-developed canal irrigation system, primarily canals branching off from Sukkur Barrage. The main irrigation canals of the district are the Kirthar Canal and Saifullah Magsi Canal. Other canals and branches are Ghar Wah, Noor Wah, Shahdadkot Branch. The Indus River forms the eastern boundary of the district, near Larkana District. It's the only major river in the area. Additionally, the district has a network of smaller waterways known as "nais," including Narani, Mardan, Khargani, Buz, Alkah, Dhadhar, Khenji, Wahandri, Trapen, and Mazarani. Natural lakes, or "dhands," like Saroh, Badam, Haso, Hamal, and Kachhri, are also found within the district.



Figure 3: Dam site view of Mazarani Dam

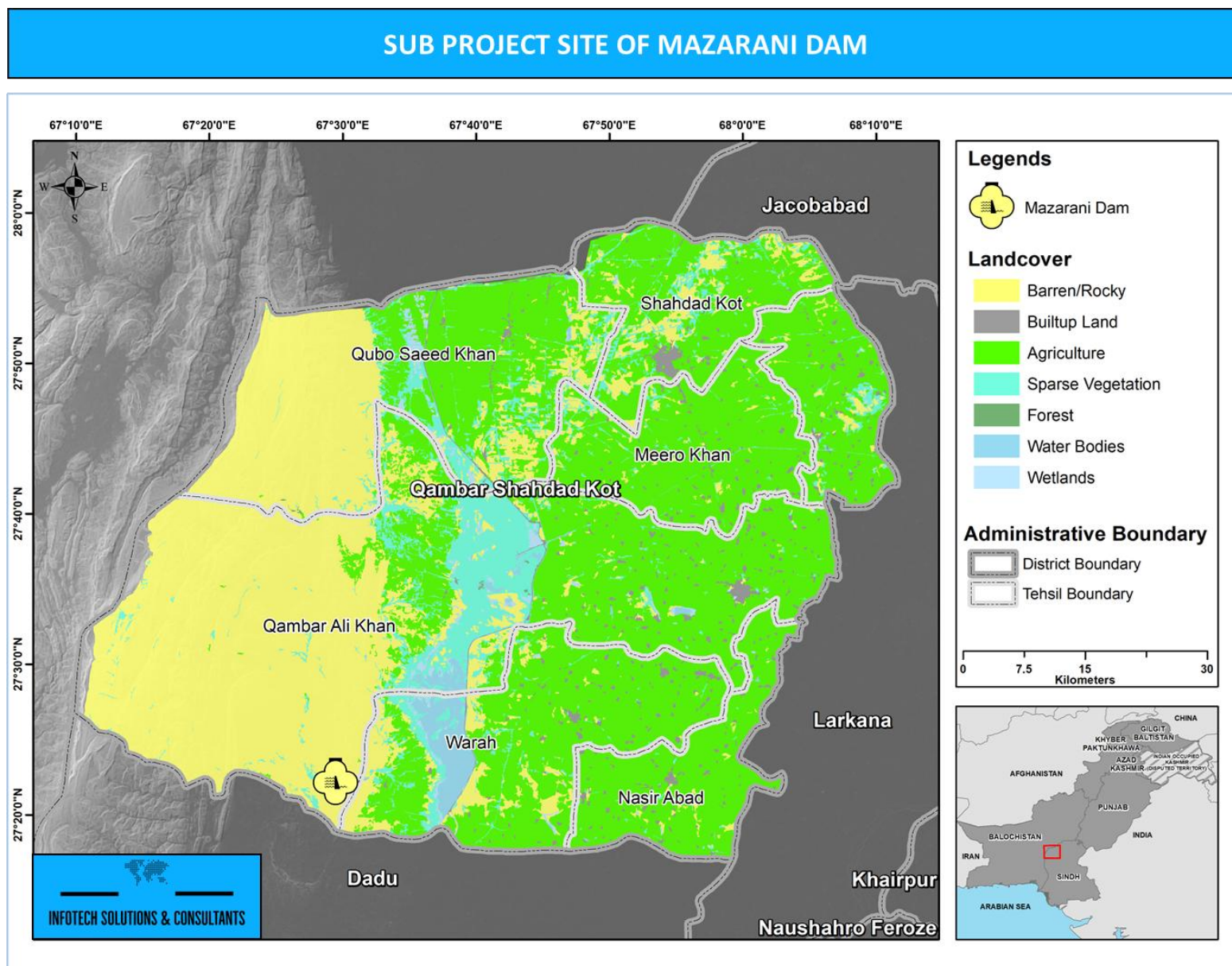


Figure 4: Sub-Project Sites of Flood Detention Dam at Mazarani Stream, Qambar Shahdadkot District

Table 2: Coordinates of Dam Sites

S.No.	Site Details	Coordinates	
		Northing	Easting
1.	Mazarani dam	27° 22' 26.258" N	67° 31' 0.291"E

2.2.2. Sub-Project Categorization

The initial screening criteria articulated in the Environmental and Social Management Framework (ESMF) of the Sindh Flood Emergency Rehabilitation Project (SFERP) indicates a moderate level of environmental and social risks associated with the proposed project interventions. These risks are anticipated to be transient and reversible, posing no enduring impact on the designated project intervention areas.

In alignment with the regulations set forth by the Sindh Environmental Protection Agency (SEPA), dams and reservoirs boasting a storage volume of less than 25 million cubic meters and a surface area below 4 square kilometers are classified under Schedule-II of the IEE and EIA Regulations, 2021. Given that the proposed dam exhibits a capacity below 25 million cubic meters and a reservoir surface area of less than 4 square kilometers (0.62 sq. km under normal pool level and 1.02 sq. km under high flood level, for Mazarani dam), the sub-project distinctly fall within the purview of Schedule-II. Consequently, an Initial Environmental Examination (IEE) will be conducted and its report has been presented to SEPA to obtain NOC before the initiation of construction activities.

2.2.3. Corridor of Impact (Col) and Right of Way (RoW)

The classification of Col and RoW as below:

The specified Corridor of Impact (Col) for the sub-project detailed in this Environmental Impacts Assessment (EIA) is envisioned as the realm (**Figure 5** and **Figure 6**) where direct impacts may transpire during the construction phase. This encompasses both the temporary and permanent structures' footprint, along with the indispensable operational space for carrying out the proposed activities. The classification of the (COI) is contingent upon the criteria expounded upon below. The details of villages along with their distance from sub project sites are provided in **Table 3**.

Table 3: Details of settlements and their distance from sub project sites

Sno	Village	Distance from the site (km)	Coordinates	
			Northing	Easting
Mazarani Dam				
1.	Goth Shah Muhammad Rind	3.24	27° 21' 11.70"	67° 32' 22.94"
2.	Goth Mehoon Khan Rind	6.22	27° 22' 15.34"	67° 33' 42.51"

- Primary Impact Zone

The main impact zone will directly relate to the footprint of the sub-project, encompassing both permanent and temporary works. In the context of the proposed sub-project, there will be no

impacts related to the relocation of residences, private land, or utilities (**Figure 5**). The project will be limited to the proposed platform/right of way, without requiring additional land acquisition. None of the public infrastructures or commercial activities has been observed within the confines of the primary impact zone.

In the event of a dam break, the area was physically surveyed and simulated using Hydrologic Engineering Center's - River Analysis System (HEC-RAS) software to estimate potential losses during construction or in the event of a breach. Since proposed dam serve dual purposes - flood detention and recharge - the estimated loss or disruption will be temporary, lasting only a few days to six weeks. This is because the water will percolate into the aquifer and gradually flow through the barrels, minimizing the impact. Maps of the area inundated are attached as Annexure V. The summary of dam break study is provided in Section 7.2.8: Dam Breach Study.

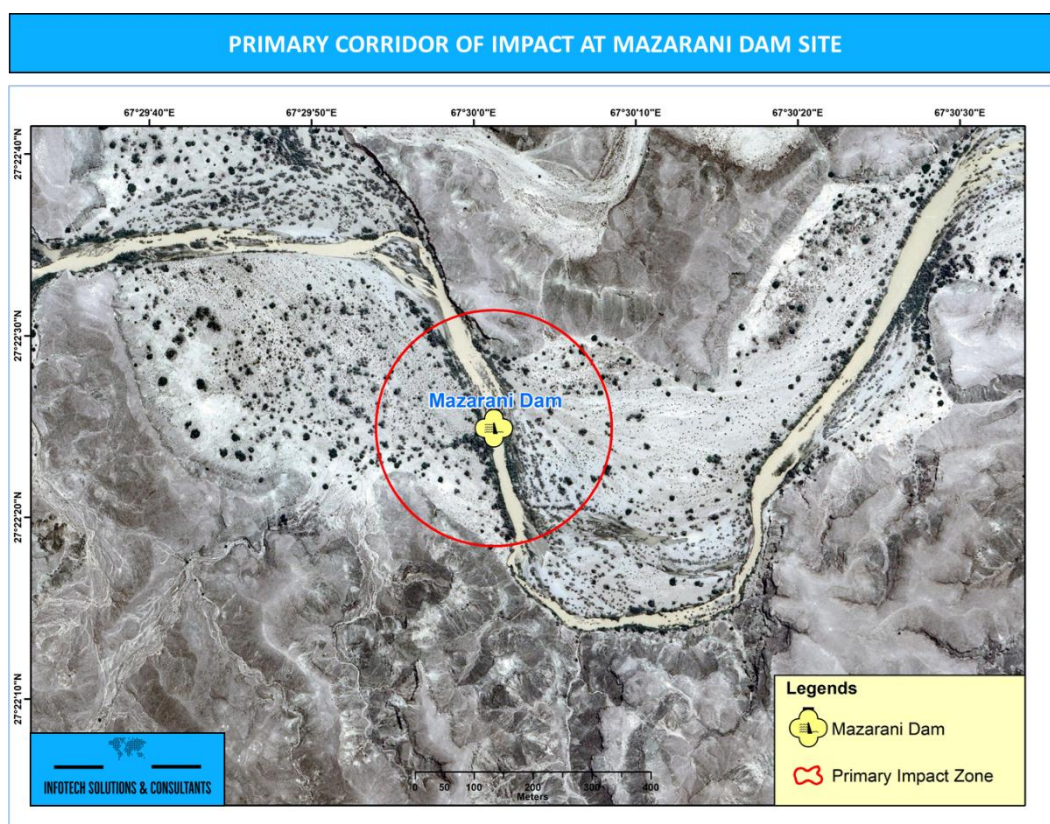


Figure 5: Primary Corridor of Impact at Mazarani Dam Site

- Secondary Impact Zone

The secondary impact zone is characterized as the areas where indirect effects arise from factors such as noise, dust emissions, campsites, and borrow sites. It's important to note that these impacts may extend beyond the Right of Way (RoW) and are strictly temporary, confined to the construction period.

A thorough assessment of indirect impacts has been conducted within a 5 km buffer zone surrounding the proposed dam (5 km on each side from the center point). This comprehensive evaluation was aimed to identify potential Socially Sensitive Receptors, including religious structures, graveyards, Basic Health Units (BHU), hospitals, schools, and other relevant

entities (**Figure 6**). The survey of the secondary impact zone revealed that most of these structures were situated in close proximity to towns and were located away from the RoW.

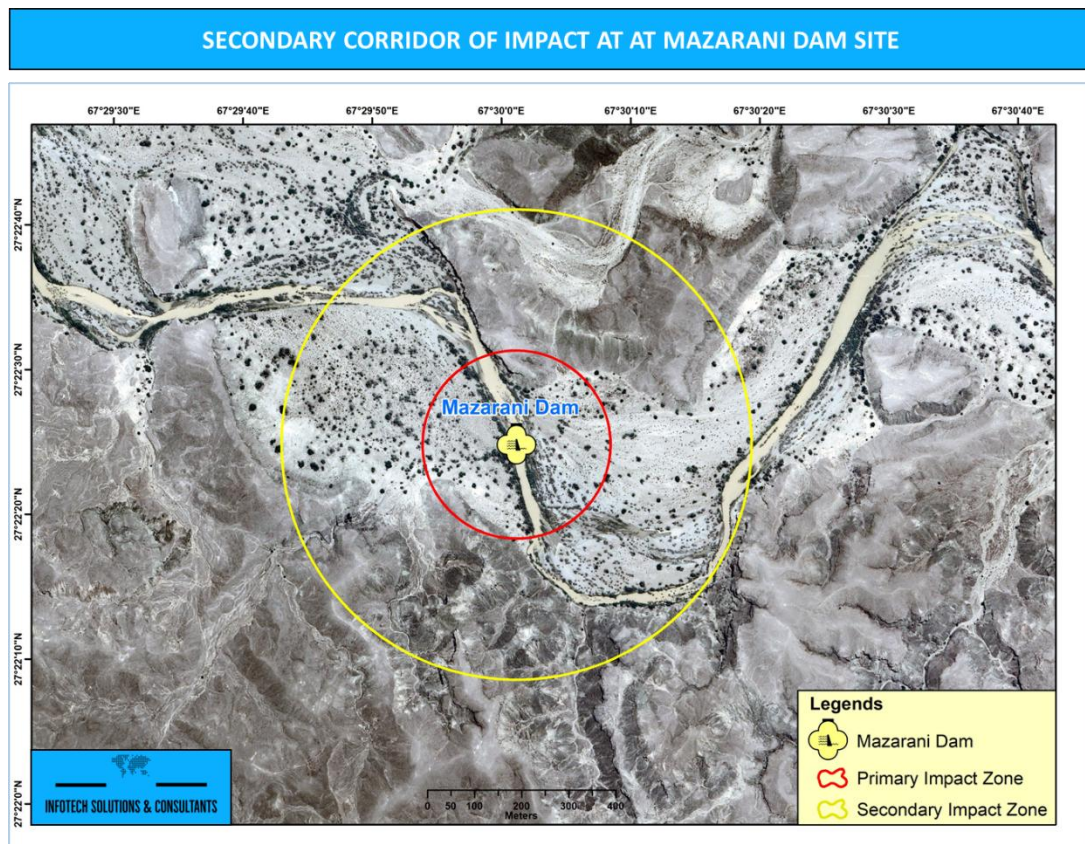


Figure 6: Secondary Corridor of Impact at Mazarani Dam Site

2.2.4. Land Ownership Due Diligence

The project will involve construction of flood detention dam at Mazarani Stream. The land of proposed sub-project is located within already proposed Right of Way (ROW) and is the property of Sindh Irrigation Department, Government of Sindh. As a part of the process, letter stating confirmation of land ownership from the Sindh Irrigation Department's concerned division has been obtained and attached as Annexure I.

The PIU E&S team and E&S consultants jointly visited the respective sites along with the Sindh Irrigation Department from 14- 15 October, 2024 to mark the ROW for sub-project(s) using limestone (chuna). The PIU and consultants team informed the community for the purpose of the marking exercise. No one from the community came forward to claim any portion of land that purportedly falls within the ROW. Photographs of marking the ROW using limestone are depicted in **Figure 7**.



Figure 7: Photographs of marking the ROW using limestone at Mazarani Dam Site

2.3. The EIA

2.3.1. Objectives

The primary objectives of the EIA are as follows:

- Identify the social and environmental risks of the sub-project and related activities.
- Suggest suitable mitigation measures for identified risks at the planning, designing, and implementation stage of the sub-project and eliminate or reduce their adverse impacts if any.
- Propose an environmental monitoring program to ensure that mitigation measures are implemented during the subproject execution and timely corrective actions are taken where required, and
- Propose the institutional arrangements required to implement and monitor the EIA.
- Comply with/Meet the statutory obligations.

2.3.2. Methodology

- Data Collection

This report has harnessed both primary and secondary data, methodically acquired through exhaustive field surveys, rigorous field tests, and keen on-site observations. The dataset has been enriched through data acquisition from relevant departments, collaborative consultation meetings, in-depth interviews, and the thorough administration of questionnaires. Furthermore, an extensive review of published materials has complemented these efforts, contributing to the establishment of a robust baseline profile encompassing physical,

biological, and socio-economic environmental conditions. The following activities were carefully executed to curate and compile this comprehensive dataset:

- Site Reconnaissance
- Detailed Site Visits
- Baseline Environmental Monitoring
- Analysis of Maps and Plans
- Literature Review
- Desk Research
- Public Consultations and Interviews
- Field Observations and Studies

2.4. The Legislative Relevance

The scope of cross-sectoral law implied by the legal definition of environment given in Sindh Environmental Protection Act (SEPA) 2014 results in the enactment of several laws about forests, water resources, wildlife, land, agriculture, health and safety. The legal applications with respect to the sub-project activities are listed in the following **Table 4**.

Table 4: Key Applicable Cross-Sectoral Legislation in Sindh

Legal Instrument	Scope and Applicability	Relevance
Sindh Environmental Protection Act, 2014	Sindh EPA is responsible for ensuring the implementation of provisions of the Act in Sindh territorial jurisdiction. Sindh EPA is also required to ensure compliance with the SEQS and establish monitoring and evaluation systems.	The proposed sub-projects fall under section 17, under schedule -II hence IEE has been developed, and NOC will be obtained from SEPA.
Sindh Climate Change Policy, 2022	The policy aims to identify the effects of climate change, provide solutions and implement framework/ plans to mitigate its effects, among other objectives - all of which are in line with the National Climate Change Policy.	The proposed SFERP project has been developed to cater to the Climate change impacts, which are severe floods, damaged infrastructure, and communities such as women and children.



Sindh Irrigation Act with Amendments in 2011	This act was unanimously amended in 2011 to remove encroachments from the natural or artificial depression courses on government lands. With a view to removing the encroachments from the natural or artificial depression courses on government lands for smooth flow of rainwater, it is expedient to make some suitable amendments to the Sind Irrigation Act, 1879 by providing severe punishment therein so that the encroachment is removed in the public interest.	The project has not been involved in any type of encroachments therefore this act will not apply to the proposed sub-project.
The Sindh Solid Waste Management Board Act, 2014	The Sindh Solid Waste Management Board Act, 2014, for the collection and disposal of all solid waste, to arrange for effective delivery of sanitation services, to provide a pollution-free environment and to deal with other relevant matters.	The proposed project may generate different types of solid and liquid wastes; therefore, this act shall apply to the proposed sub-project to deal with relevant matters.
Land Acquisition Act 1894	Empowers the government to acquire private land for projects of national importance and lays down the acquisition procedure.	No land acquisition is involved as the proposed subproject interventions are within the existing RoW. Efforts will be made to minimize LAR and economic resettlement issues. If the land for the project is acquired the acquisition process shall comply with RPF which has been prepared for the SFERP.
The Sindh Forest (Amendment) Act, 2012	Regulates forest resources. Empower the government to declare any forest area reserved or protected.	Not relevant as there is no reserve or protected forest near the sub-project area.
The Sindh Wildlife Protection Ordinance 1972 (Amendment 2001, 2010) Act, 2007, 2020	The law specifies three broad classifications of the protected areas: - a). National Parks - Hunting and breaking of land for mining are prohibited in national parks, as are removing vegetation or	None of the interventions is likely to be carried out within or near protected areas.



	polluting water flowing through the park. b). Wildlife Sanctuaries - Wildlife Sanctuaries are areas that are left as undisturbed breeding grounds for wildlife. Cultivation, grazing and residing are prohibited in the demarcated areas. Special permission is required for the entrance of the public. However, in exceptional circumstances, these restrictions are relaxing able for scientific purposes or the betterment of the respective area at the discretion of the authority. c). Game Reserves - Game reserves are designated as areas where hunting or shooting is not allowed except under special permits.	
Employment of Child Act, 1991	In accordance with this Article, the Employment of Child Act (ECA) 1991 disallows child labor in the country. The ECA states that no child shall be employed or permitted to work in any of the occupations set forth in the ECA (such as transport sector, railways, construction, and ports) or in any workshop wherein any of the processes defined in the Act is carried out.	The contractor will be bound by this Act to disallow any child labor at the sub-project site.
The Sindh Occupational Safety and Health Act, 2017	The clauses relevant to the project are those that concern health, safety and welfare of workers, disposal of solid wastes and effluents, and damage to private and public property. The Act also provides regulations for compulsory vaccination, inoculation, and precautions against contagious or infectious diseases at workplaces.	All these regulations will apply to the project construction's contractor.
The Antiquities Act 1975	Preservation and protection of antiquities (any object more than 75 years old). Empower the	No protected antiquity within the sub-project area only chances find the procedure will apply.

	government to declare any antiquity as protected.	
Sindh Cultural Heritage (Preservation) Act - 1994	The Act 1994 provides rules and regulations to preserve and protect ancient places and objects of agricultural, historical, archaeological, artistic, ethnological, anthropological and national interest in the province of Sindh.	This act may be applicable in a specific situation i.e., only chance find.
The protection against harassment of women at work place Act, 2010 (Amendment Act 2022)	The protection against harassment of women at work place Act, 2010 (Amendment Act 2022) is a legislation in Pakistan aimed at preventing and addressing harassment of women in the workplace	This act will be applicable for PSEA "Prevention of Sexual Exploitation and Abuse" at workplace

2.5. The World Bank Standards and Guidelines Relevance

The World Bank has defined standards and designed guidelines to avoid, minimize, reduce, and/or mitigate the adverse environmental, social & health risks and impacts of a project supported through Investment Project Financing (IPF).

2.5.1. The World Bank Environmental and Social Standards

The World Bank Environmental and Social Framework 2018 (ESF) defines the environmental and social standards applicable to project supported through Investment Project Financing (IPF). The relevance of ESF is given in **Table 5**.

Table 5: World Bank Env. & Social Standards Relevant to SFERP Project

WB Environmental and Social Standards		Relevance
ESS1	Assessment and Management of Environmental and Social Risks and Impacts	Relevant
ESS2	Labor and Working Conditions	Relevant
ESS3	Resource Efficiency and Pollution Prevention and Management	Relevant
ESS4	Community Health and Safety	Relevant
ESS5	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
ESS6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
ESS7	Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not Relevant
ESS8	Cultural Heritage	Relevant
ESS9	Financial Intermediaries	Not Relevant
ESS10	Stakeholder Engagement and Disclosure	Relevant

2.5.2. World Bank Environmental, Health & Safety Guidelines

World Bank Group's Environmental, Health, and Safety (EHS) Guidelines apply to the proposed project. In particular, contractors will be required to implement the General EHS Guidelines (April 2007)¹.

2.5.3. World Bank Group Gender Strategy (2016-2023)

The World Bank Group's Gender Strategy (fiscal year 2016–23) presents gender equality as integral to smart development policy and posits that successful implementation of the strategy will help achieve the Bank Group's Goals. The strategy focuses on four objectives: human endowments, jobs, asset control and ownership, and voice and agency.

To implement the strategy, capacity building for local law enforcement and Information and awareness-raising campaigns for community members, specifically women and girls have been proposed in the EIA. Mobilizing rural communities with a view to maximizing the benefits of the project.

2.6. Compliance with EIA

The Environmental Monitoring Plan (EMP) segment embedded within the EIA report is of obligatory significance, serving as an integral component of the bidding documents. Furthermore, unwavering compliance with all stipulations delineated in the No Objection Certificate (NOC) is compulsory and constitutes an inherent aspect of the bid document. Acknowledging the imperative of aligning with on-site dynamics and the distinctive requirements of each sub-project/site, the contractor is authorized to solicit amendments in the Environmental Impacts Assessment (EIA). Any requisite modifications must be formally communicated to the Project Implementation Unit (PIU).

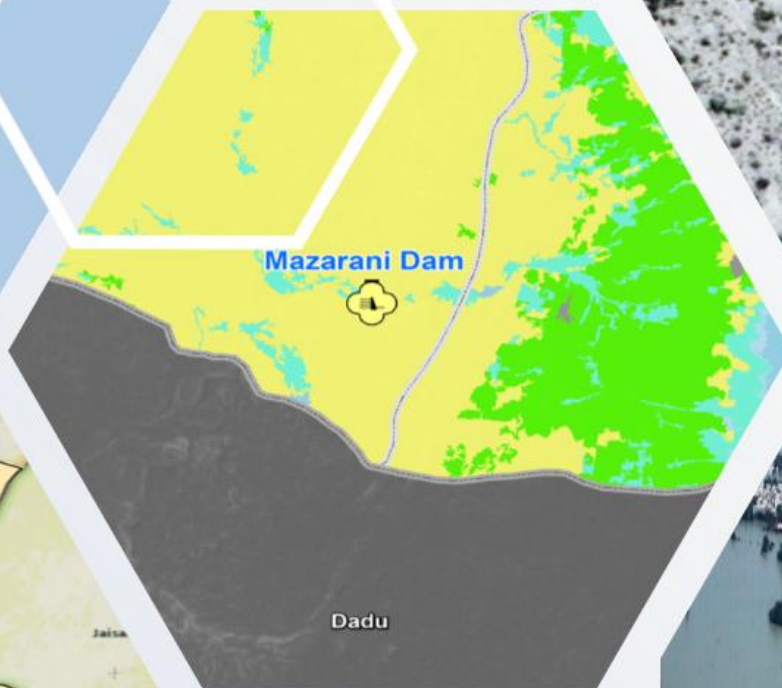
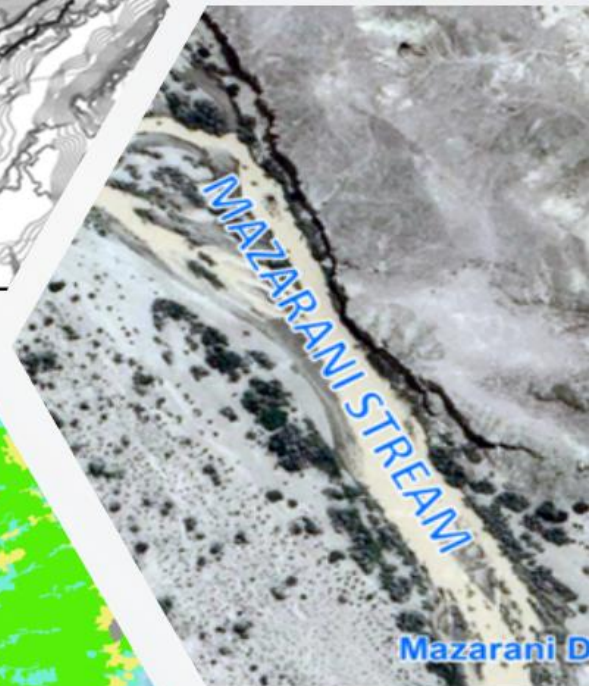
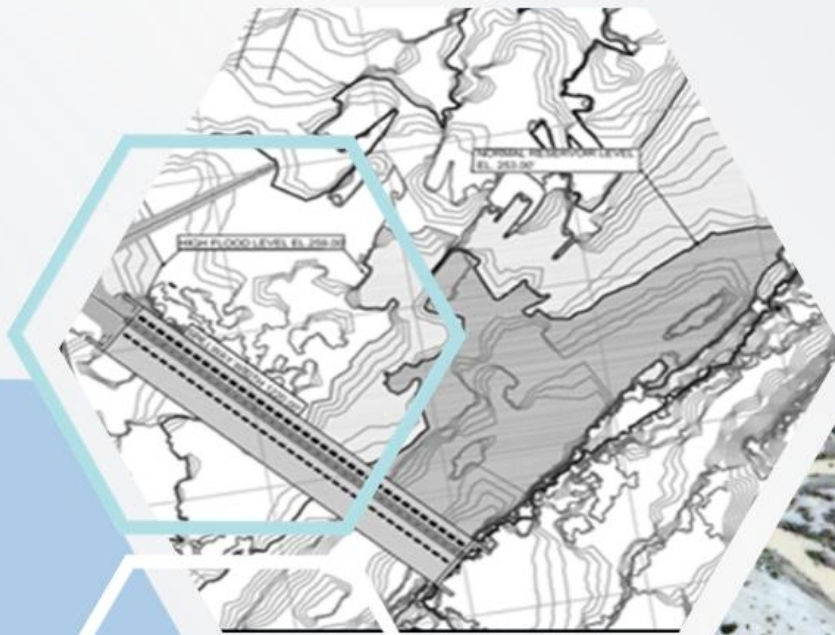
Following approval, the site-specific Environmental Impacts Assessment (EIA) will be seamlessly integrated into the civil works contracts, establishing legal obligations for the contractor. The revised Site-Specific EIA necessitates official endorsement from the Project Implementation Unit (PIU).

Moreover, it is incumbent upon the contractor to formulate supplementary site plans, as outlined in Section 7, encompassing a comprehensive array of plans such as a traffic management plan, Health, Safety, and Environment (HSE) plan, waste management plan, communicable diseases management plan, among others. These meticulously crafted site-specific plans must undergo rigorous review and clearance by the Project Implementation Unit (PIU) prior to the initiation of on-site mobilization.

¹ World Bank Group EHS Guidelines are available at:

<http://www.ifc.org/wps/wcm/connect/554e8d80488658e4b76af76a6515bb18/Final%2B%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES>

DESCRIPTION OF PROJECT





3. DESCRIPTION OF SUB-PROJECT

3.1. Salient Features of the Sub-Project

The proposed Sindh Flood Emergency Rehabilitation Project (SFERP) will respond to the impact of the floods 2022 in Sindh by supporting recovery, improving livelihoods, rehabilitating selected infrastructure, and strengthening institutional disaster management capacity, with an aim to improve the climate change and disaster resilience of communities and build back better.

This sub-component will support the construction of small rainwater flood detention dam, less than 15 meters in height, in Mazarani Basin, District Qambar Shahdadt. The embankment height is 23 ft. It aims to protect nearby communities from floodwaters and recharge groundwater, providing a reliable water source and supporting regional development. Salient features of the dam is provided in **Table 6**.

Table 6: Salient features of construction of Flood Detention Dam at Mazarani

Sr. No	Name	Latitude	Longitude	Catchment Area (Sq. Miles)	Design Flood (Cusecs)	Reservoir Capacity (Acre-ft)	Dam Height (ft)	Spillway Height (ft)	Freeboard (ft)	Head over Crest (ft)	Embankment Length (ft)	Spillway Length (ft)
1	Mazara ni Dam	27° 22' 26.258" N	67° 31' 0.291"E	131.12	177,374	86,345	32	17	5	10	2920	900

This sub-component includes Construction of Mazarani Dam in District Qambar shahdadt as been depicted in **Figure 8** and **Figure 9**.

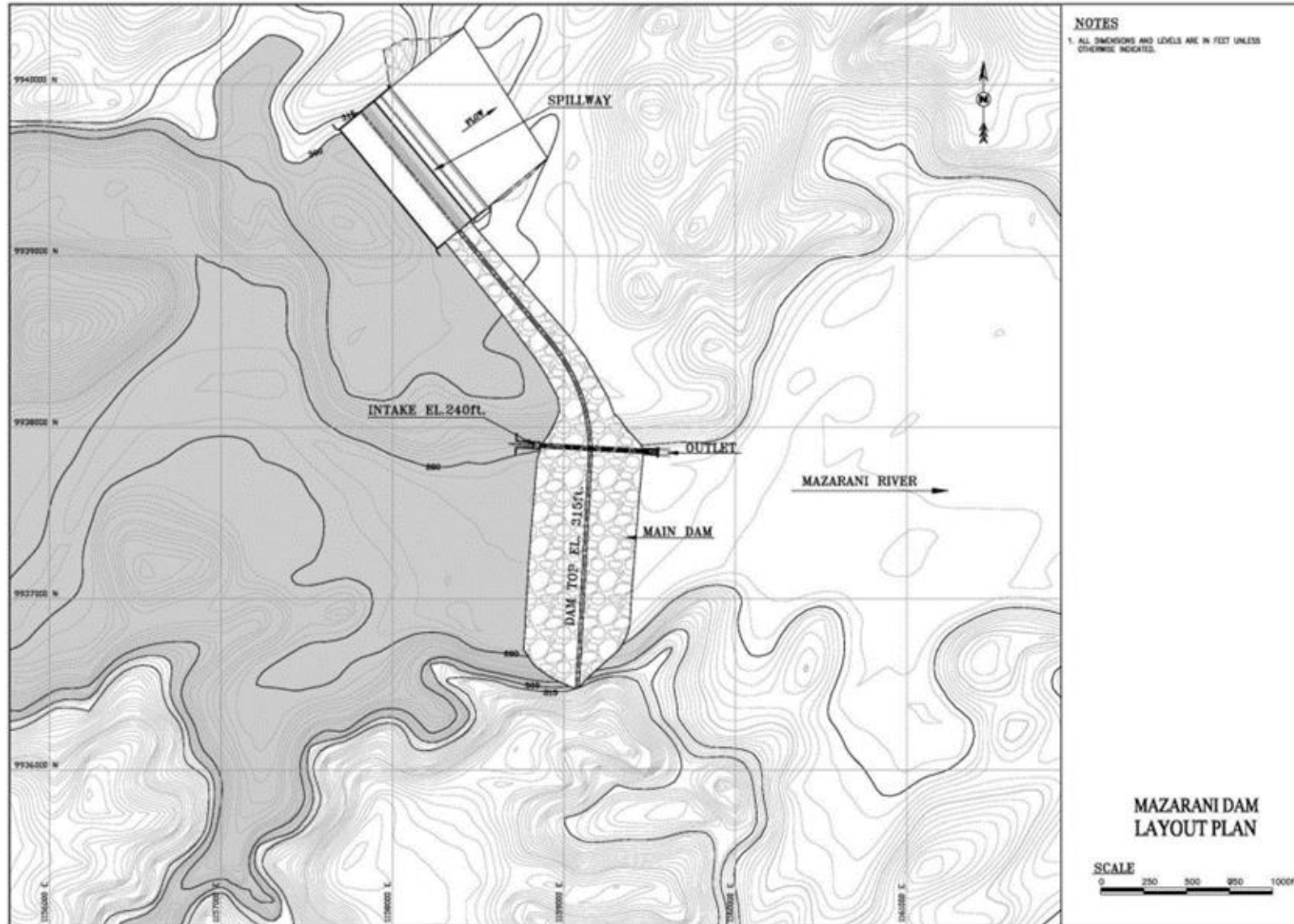


Figure 8: Reservoir Layout Plan of Mazarani Dam

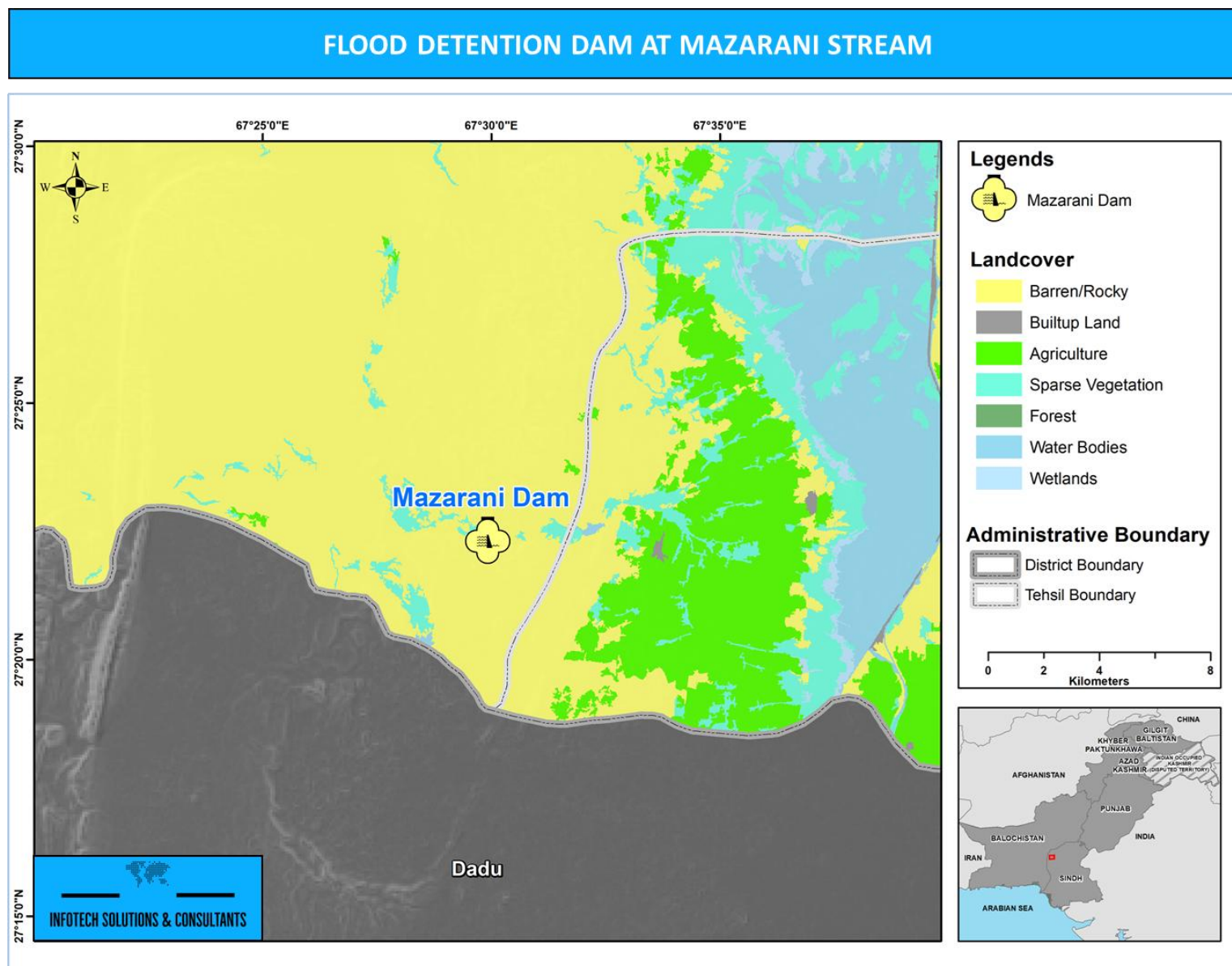


Figure 9: Sub-Project Site of Mazarani Dam

3.2. The Rehabilitation/Construction Activities at Sub-Project Sites

The summary of the rehabilitation activities related to the sub project sites and construction activities are summarized in **Table 7**.

Table 7: Construction Activity Details of Mazarani Dam

Mazarani Dam	
S. No.	Description
1	Construction of concrete spillway
2	Construction of main dam
3	Dam access road and structures

3.2.1. Construction Material

The material for construction would include coarse aggregates (crush), fine aggregates (sand), water, reinforcement, etc. The material for civil works will be bought from the local market after the approval of Construction Supervision Consultant (CSC). Natural materials such as coarse aggregate, stones, and coarse filters can be obtained from crush plants of local suppliers. Illegal crushing plants/suppliers cannot do the procurement of these materials. Only purchase by those crush plants/ suppliers having approval i.e. NOC, permit, etc. from the relevant department of the Sindh Government (Mines and Mineral Development Department & SEPA) and this should be part of the contract agreement. The contractor will submit documentation for sources of materials to PIU monthly. Existing roads/tracks will be used for the transportation of the material. Estimated quantities of construction material is given in **Table 8**.

Table 8: Estimated Quantities of construction material of dam at Mazarani Stream

S.N o.	Item	Unit	Construction of Spillway	CONSTRUCTION OF MAIN DAM	DAM ACCESS AND STRUCTURES	Total
1	Excavation	Cft	816,809	1,247,284	165,000	2,229,093
2	Fill	Cft	-	7,520,267	5,512,080	13,032,347
3	Lean Concrete (C-15)	Cft	1,139	-	6,389	7,527
4	Mass Concrete (C-21)	Cft	566,250	-	-	566,250
5	RCC (C-28)	Cft	108,039	-	61,800	169,839
6	Sub-base course	Cft	-	-	393,720	393,720
7	Base Course	Cft	-	-	262,480	262,480

S.N o.	Item	Unit	Construction of Spillway	CONSTRUCTION OF MAIN DAM	DAM ACCESS AND STRUCTURES	Total
8	Reinforcing Steel Grade-60	Kg	-	-	168,239,564	168,239,564
9	Gates Mechanical	Job	-	-	-	-
10	Protection Stones	Cft	38,250	1,548,812	-	1,587,062
11	Water	Litres	3,411,678	27,257,629	20,390,435	51,059,742
12	Carpet	Sft	-	-	-	-

3.2.2. Water for Construction

The Contractor is accorded the primary prerogative to utilize stream water (Mazarani Stream) for general construction requirements, contingent upon approval from the Irrigation Department. Alternatively, the Contractor has the option to harness ground water by installing new solar-powered tube wells, more than 500m away from the already installed tubewells for local community use. Prior to the installation of new tube wells, the Contractor shall conduct an Electrical Resistivity Survey and pump-out tests to assess the groundwater potential for construction purposes. This obligation shall be enshrined as a binding contractual commitment, meticulously documented within the bid terms. Upon the completion of the subproject, the newly established solar-powered tube wells must be relinquished to the relevant authorities for the betterment of the local community.

3.2.3. Manpower Requirement

The equipment such as loaders, dumpers, trucks, and tractor trolleys will be employed to transport earth materials from specified locations. Operators and drivers from the local area, possessing valid driving licenses and experience of operating vehicles like trucks, dumpers, and dozers, will be preferred for these jobs. **Table 9** shows estimated manpower requirement. Workforce requirement is based on best estimates and is subject to revision. The final requirement would be determined after the finalization of bid documents by the contractor(s).

Table 9: Estimation of Required Manpower

S. No.	Type of Manpower	Mazarani Dam Nos.
1	Construction Supervisor	4
2	Driver/ Operator	75
3	Surveyor	4
4	Unskilled Labour	40
5	Skilled Labour	22
6	Semi-skilled Labour	18



7	Environment and Social Safeguard Staff	3
Total		166

3.2.4. Contractor's Camps

During the sub-project construction, labour camp will be setup on government land adjacent to the project site, ensuring a distance of at least 500 meters from any nearby settlements. As construction works will be confined only to the proposed sub-project, therefore, camp will be placed as per designated site. The contractor will be bound to provide facilities like dormitories with active mobile internet, kitchen / washing / bathing / latrine with septic tanks and medical facility (including checkup for communicable disease) to all the laborers. The health screening of laborers and workers will be conducted at the start of the project. The contractor will prepare workers' Code of Conduct and Camp layout plans and get them approved by the Construction Supervision Consultant (CSC) and PIU for implementation at the site. One contractor camp will be established at Sub-Project site. The size of the camp would be around 2 - 3 acres. Approximately 37 labors, primarily consisting of skilled labor, will reside at contractor's camp. Local labor which is 75% of the total manpower will return home after working hours. So, camp will be occupying only 30-37 labor approximately. Further, after the completion of construction works, the temporary structures of the camp shall be removed and the area will be cleared to its original condition. In case of eligible private land obtained for the construction of camp, the contractor is expected to pay monthly rent agreed between the contractor and the land owner. The permanent structure within the premises of the camp will be returned to the land owner after the completion of the sub project. The location of camp is shown in **Figure 10**. The detail of the contractor camp in the sub project sites are summarized in **Table 10**.



Figure 10: Contractor camp location at Mazarani Dam

Table 10: Contractor Camp location and details in the sub project sites

S. No.	Sub-Project	Coordinates		Approx. Area in sq ft	Details
		Northing	Easting		
1	Mazarani Dam	27° 22' 36.79"	67° 30' 13.27"	79,490	Shrubland more than 4583m away from Goth Shah Muhammad Rind. Easily accessible through Eastern Bypass M9 Link Road

3.2.5. Machinery and Equipment

The construction work includes mainly the earthworks. These works will require earth-moving types of machinery such as excavators, dumpers, graders and Front-End Loader, transit mixtures, Dozer, Water Tankers, Generators, etc. The concrete works will involve a medium-sized batching plant and concrete placing equipment. The contractor will provide the exact location of the batching plant and get approval from PIU. The contractors will directly manage all equipment. The contractor will ascertain the precise quantity of equipment necessary at the site for the execution of the tasks. Furthermore, the contractor will determine the exact number of equipment needed on-site to effectively execute the project tasks. Estimated quantities of machinery required is given in **Table 11**.



3.2.6. Construction Time

The rehabilitation works of the sub-project are proposed to be completed in the stipulated time. The estimated duration of the work is 12 months.

Table 11: Machinery required for construction of Dam

S.No	Machinery	Nos.
1	Chain / Wheel Excavators	6
2	Grader	2
3	Dumper / Tractor Trolley	16
4	Water Tanker/Bowzer	4
5	Dozer D7 & others	4
6	Loader	4
7	V. Roller	4
8	Hilux (Double Cabin)	2
9	Pickup Single/ Double Cabin	4
10	Mobile workshop	1
11	Generator	4
12	Transit Mixers	8
13	Dewatering Pumps	8
14	Mixer Machine	4
15	Batching plant	2
16	Total Station	4
17	Auto Levels	4
Total		81

ENVIRONMENTAL BASELINE



4. THE ENVIRONMENTAL BASELINE

This section elucidates the existing environmental and socio-economic conditions within the SFERP project area. The intent of establishing an environmental and social baseline is to establish a benchmark for assessing the project's impacts. Additionally, this segment outlines the status of archaeological sites, protected areas, and vulnerable flora and fauna receptors in the project area. Moreover, it delves into the prospective impacts of the project and articulates corresponding mitigation measures designed to address these impacts.

4.1. Methodology

A Survey team consisting of Environmental Officer, Ecological Officer, Social Safeguard Officer, Gender Officer and Surveyors was formulated to carry out baseline data collection in the sub project area. The environmental team documented species with photographic evidence, inventoried trees in the sub project site, estimated the number of trees to be cut and collected surface and groundwater samples for laboratory analysis to assess water quality. In addition, secondary data sources are also utilized. Moreover, noise and ambient air data were collected by experts from SEPA-approved laboratories in the project area. Social and Gender Officials visited the villages in the proximity of the sub project site to collect demographic data, assess economic condition, document household facilities and fuel consumption, religious affiliations, identify social issues, and culturally or historically significant features. The environmental and social screening checklist is attached as **Annexure III**.

4.2. Physical Environment

4.2.1. Geography, Geology and Soils

Qambar Shahdadkot district is located in the northwest of Sindh Province, positioned between 67° 10' to 68° 12' East longitude and 27° 26' 31" to 27° 58' 55" North latitude. It is bordered by Nasirabad and Jhal Magsi districts of Balochistan to the northwest, Shikarpur and Jacobabad districts of Sindh to the northeast, Larkana district to the east, the Kirthar Mountain Range to the west, and Dadu district to the south. Beyond the Kirthar Mountain Range to the west lies Khuzdar district in Balochistan.

Qambar Shahdadkot district falls within the semi-arid region of Sindh and is the fourth hottest area in the province, following Jacobabad, Nawabshah, and Larkana. The hottest months are May, June, and July, with temperatures ranging from 45°C to 40°C. The coldest months are December and January, with temperatures between 12°C and 9 °C.

The surface geology of Qambar Shahdadkot district is primarily composed of alluvial deposits from the Indus River, featuring a mix of fertile silt, clay, sand, and gravel. Quaternary sediments of Qambar Shahdadkot from the Late Holocene, deposited by the Indus River (**Figure 11**). These young sediments are linked to the orogenic movements of the Himalayas, a process that began in the Early Pleistocene and intensified over time. The exposed rocks in the region range from Eocene to sub-recent sedimentary formations, reflecting the complex stratigraphy shaped by the ongoing Himalayan uplift and sedimentation. The surface alluvial deposits in the area, as shown in **Figure 12** **Error! Reference source not found.**, consist of fine sand, silt, and clay, transported and deposited by streams. This sedimentary interplay has

created a fertile landscape, ideal for agriculture, shaped by the dynamic forces of watercourses.

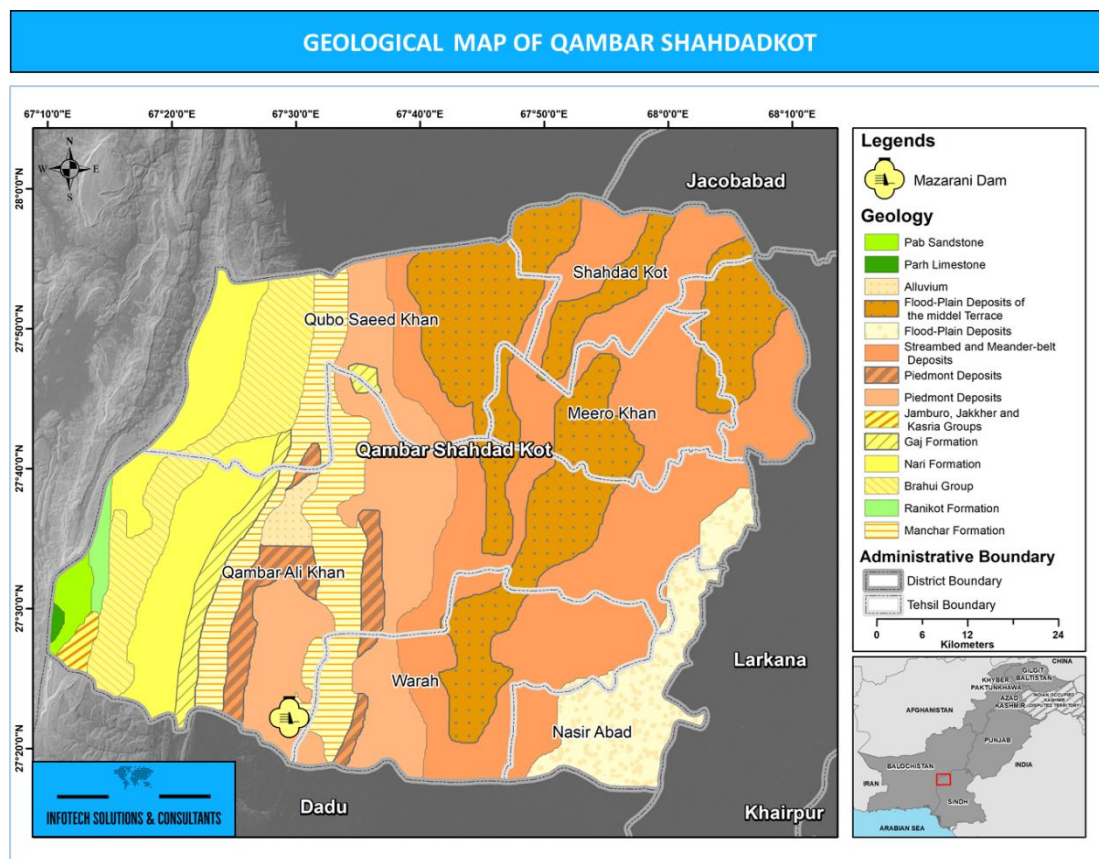


Figure 11: Geological Map of Qambar Shahdadkot District

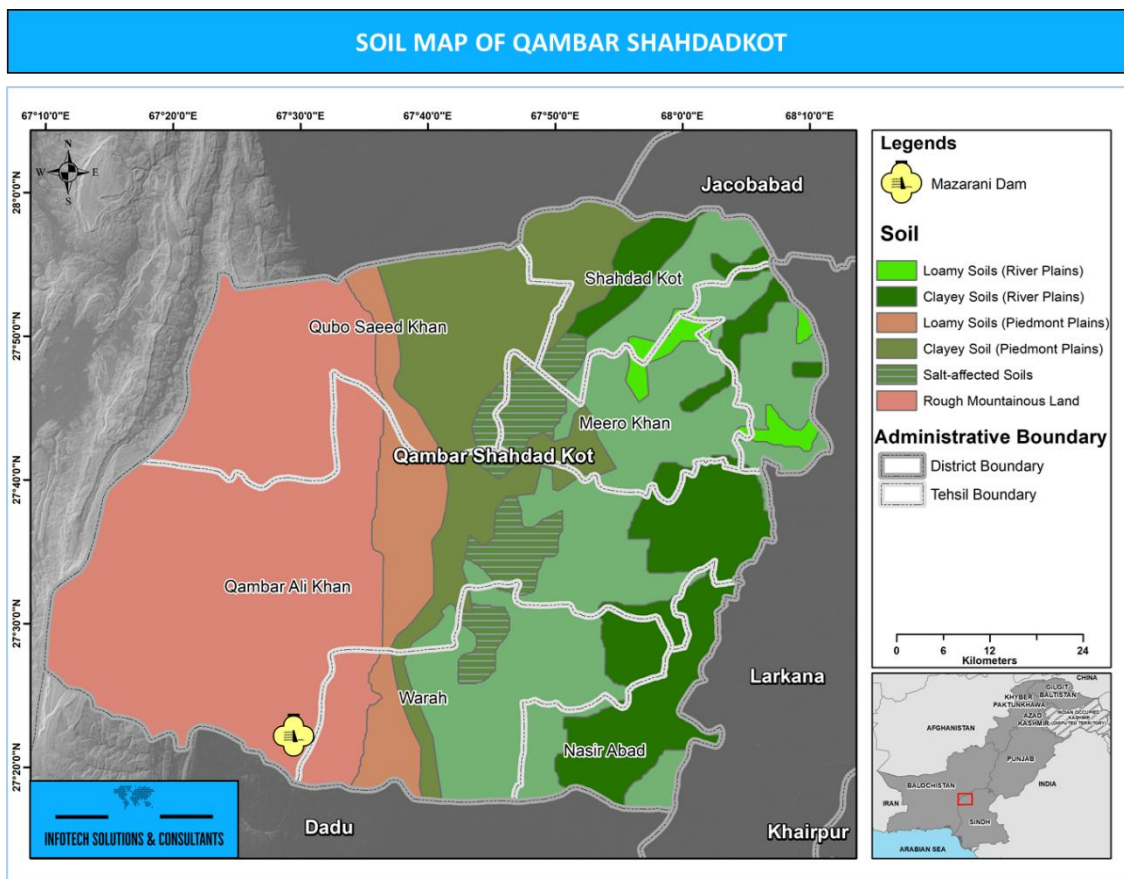


Figure 12: Soil Map of Qambar Shahdadkot District

4.2.2. Seismicity

As depicted in **Figure 13**, the map delineates that all the sub-project areas fall within Zone 2B, with peak ground acceleration (PGA) ranging from 0.16 to 0.24 g, as per the specifications of the Pakistan Building Code of 2007. This categorization has placed the sub-project areas in a low-damage risk zone, indicating a minimal probability of encountering earthquakes. The seismic analysis also highlighted that none of the sub-project site was situated in Zone 4, identified as the High Damage Risk Zone, which encompasses areas vulnerable to MSK VIII intensity. The seismic zoning based on Peak Ground Acceleration (PGA) is summarized in **Figure 13**.

Table 12: Seismic Zones

Seismic Zone	Seismic Zone Peak Horizontal Ground Acceleration "g" is the acceleration due to gravity
1	0.05 to 0.08g
2A	0.08 to 0.16g
2B	0.16 to 0.24g
3	0.24 to 0.32g
4	> 0.32g
Source: Building Code of Pakistan, Seismic Provisions	

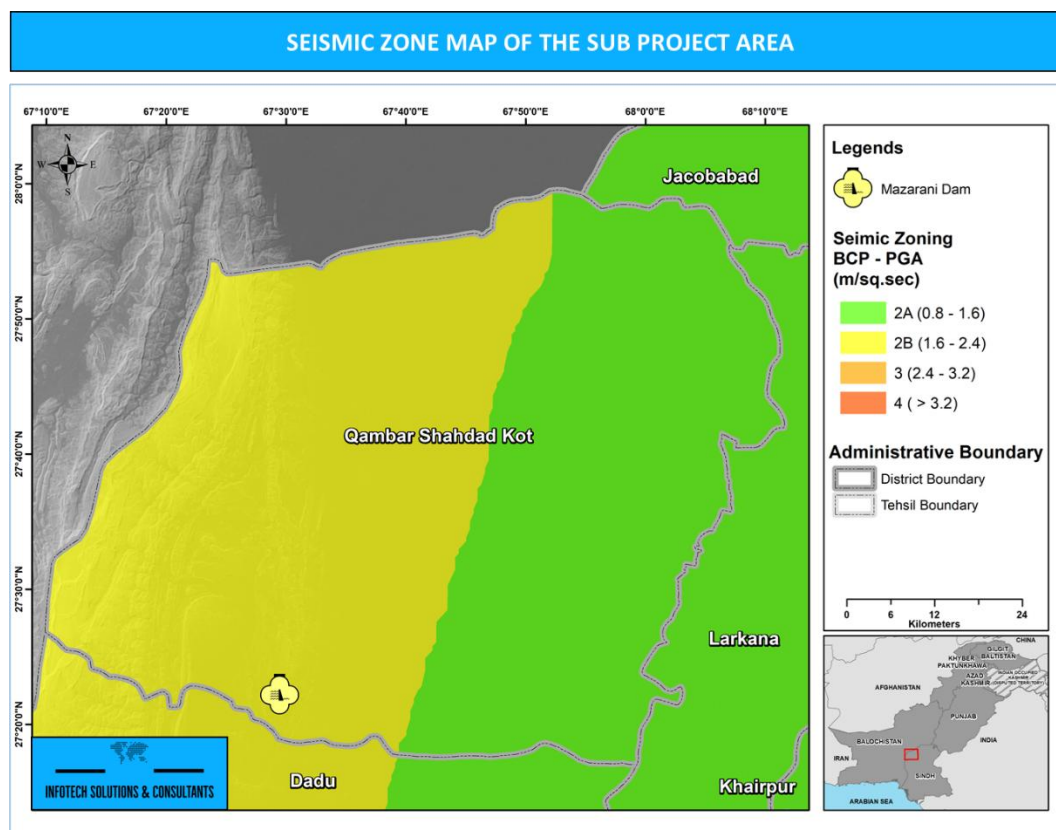


Figure 13 : Seismic Zones map of the Sub-Project Area

4.2.3. Rainfall

In an average year, the sub-project site witnesses a peak rainfall ranging from 1.57 to 2.36 inches or 40-60 mm. The primary precipitation occurs during the monsoon season in July (**Figure 15**), originating from the southwest, while prevailing winds predominantly blow from the northeast for the remainder of the year. During a favorable rainy season, the area undergoes a transformation into a lush green landscape. Winter rains are minimal, and dust storms are commonplace, characterized by winds reaching 20 to 25 km/h from April to June in the region.

The peak temperature exceeds 40°C during the scorching months of April, May, June and July (**Figure 14**). These climatological conditions in the designated subproject area are substantiated by data obtained from the meteorological station, as outlined in **Figure 15**. The data acquired from the meteorological station is presented in **Table 14**.

Table 13: Nearest Meteorological Stations

Name of Sub-Project Site	Meteorological Station
Construction of Flood Detention Dam at Mazarani Stream	Larkana

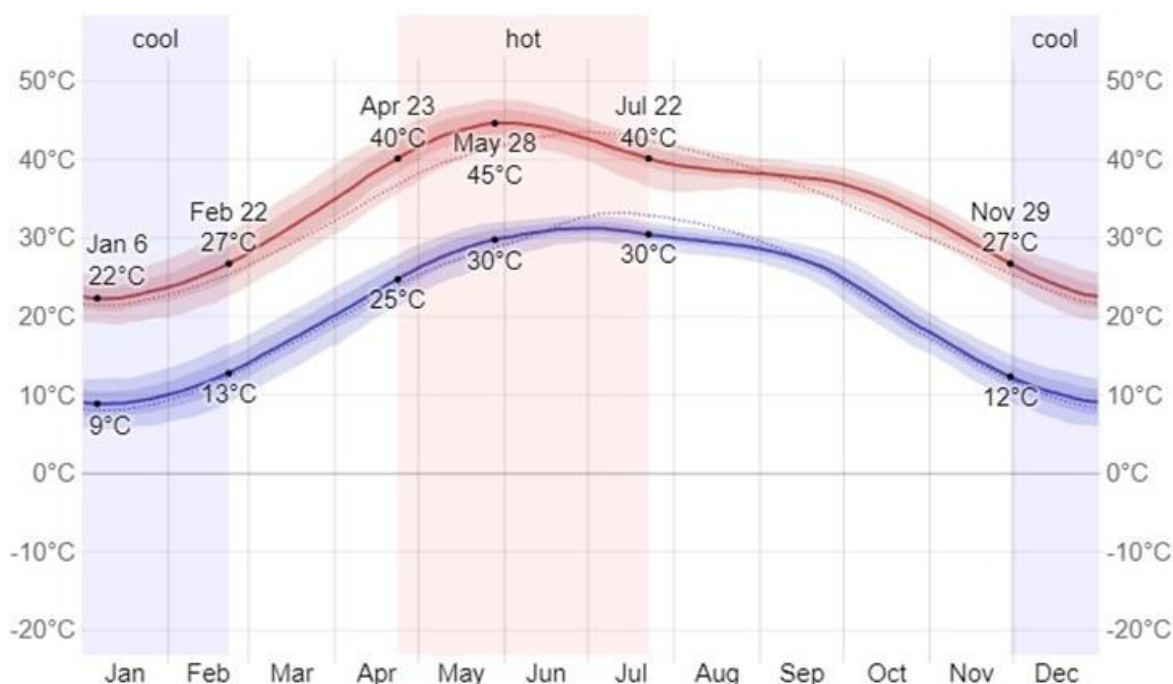


Figure 14: Temperature Profile of the Sub-Project Area

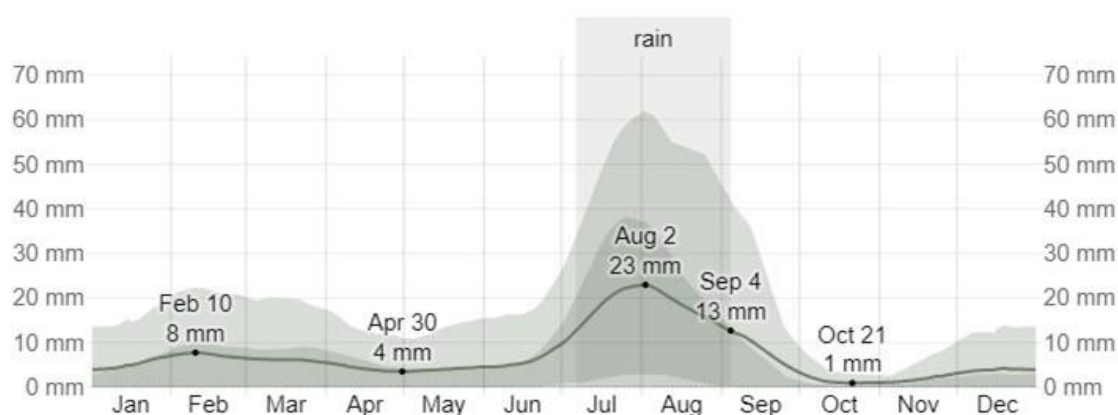


Figure 15: Precipitation Profile of the Sub-Project Area

Table 14: Climatological Data of Sub-Project Areas

Meteorological Stations	Rainfall (inch)		Temperature (°C)		Evaporation (inch)	
	Min.	Max.	Min.	Max.	Min.	Max.
Larkana	0.03	2.36	09	45	5.42	12.48

4.2.4. Water Resources and Quality

- Surface Hydrology

The only river in Qambar Shahdadt district is the Indus River, which flows along the eastern boundary near its border with Larkana District. The area is also drained by numerous hill torrents, locally referred to as "nais," including Narani, Mardan, Khargani, Buz, and Alkah. Additionally, the district is home to several natural lakes, or dhands, such as Hamal, Kachhri, and Lahori.



- Surface and Groundwater Analysis

Professionals from Ducom Lab undertook sampling at diverse locations within the sub-project area, and the subsequent analysis occurred at the Ducom laboratory, duly approved by SEPA. The selection of monitoring sites carefully considered sensitive receptors and was conclusively determined through the baseline survey, site walkover, and visits to the surrounding areas. The justification for selecting specific sampling locations is explained in **Table 15**. Comprehensive results, inclusive of location coordinates and maps, can be found in **Annexure II**, in the form of meticulously compiled scan reports. The samples underwent testing in strict accordance with the Sindh Environmental Quality Standard - 2016 (SEQS).

Table 15: Rationale for the Baseline Environmental Monitoring

S. No	Monitoring Parameters	No. of samples	Rationale
1	Ambient Air	1	In the vicinity of the sub-project sites
2	Drinking-Water/Ground Water	1	Sensitive receptors in the vicinity of the sub-project sites
3	Surface/ Waste Water	1	Surface water bodies and waste water near the sub-project site
4	Noise	1	At the sub-project site and in the settlements nearby

The analysis of surface water quality reveals that all toxic metals remain within specified limits as outlined in the SEQS. However, the drinking water analysis shows elevated levels of TDS at Sub-project site.

4.2.5. Air Quality and Noise Level

- Air Quality

The sub-project area is located in a sparsely populated region devoid of industrial or commercial activities. Dust emissions resulting from vehicular traffic on unpaved roads contribute to localized effects. The primary pollutants released from vehicle exhaust pipes include particulate matter, carbon monoxide, sulfur dioxide, and nitrogen oxides. Typically, these emissions affect air quality in the immediate vicinity of the roads. However, it is noteworthy that the traffic volume on the roads within the sub-project area is relatively low compared to national highways or other major routes.

Ambient air quality assessments were conducted in October 2024, and the results illustrate that all parameters fall within the permissible limits outlined in SEQS 2016. Comprehensive laboratory reports detailing ambient air quality can be found in **Annexure II**.

- Noise

The proposed sub-project is situated in sparsely populated areas with minimal traffic, and there are no other sources of noise in the designated areas. As part of the baseline survey, ambient noise levels were measured in the sub-project area and were found to be within the permissible limits set by SEQS and WHO standards. Comprehensive laboratory reports detailing ambient noise levels can be found in **Annexure II**.

4.3. Biological Environment

The sub-project site is located in a rural setting with a restricted and uniform habitat, sustaining only a limited variety of fauna and flora species. This report will specifically address the sub-project area, highlighting the following general categories.

4.3.1. Fauna of the Sub-Project Area

Through field surveys and a thorough literature review, it has been observed that the increase in population within the project area has led to a notable decline in wildlife abundance and diversity, reaching a minimum level. Figure 29 shows some of the fauna and Figure 30 shows some of the avifauna in the subproject areas. Moreover, details of the Fauna at study are given in **Table 16** and a list of avifauna is in **Table 17**.

Table 16: Fauna in Sub-Project Area

S. No.	Common Name	Scientific Name	Conservation status by IUCN
Large mammals			
1	Asiatic Jackal	Canis aureus	LC
2	Indian Fox	Vulpes bengalensis	LC
3	Grey Mongoose	Herpestes edwardsi	LC
4	Indian wild boar	Sus scrofa	LC
Small mammals			
1	Indian Hare	Lepus nigricollis	LC
2	Indian Hedgehog	Paraechinus micropus	LC
3	Five Striped Palm Squirrel	Funambulus pennantii	LC
4	Indian Porcupine	Hystrix indica	LC
5	Roof Rat / House Rat	Rattus	LC
6	House mouse	Mus musculus	LC
7	Little Indian Field Mouse	Mus booduga	LC
8	Balochistan Gerbil	Gerbillus nanus	LC
9	Indian Gerbil	Tatera indica	LC
10	Indian Desert Jird	Meriones hurrianae	LC
Herpeto-fauna			
1	Indian Garden Lizard	Calotes versicolor	LC
2	Yellow-headed Rock Agama	Laudakia lirata	LC
3	Black Rock Agama	Laudakia melanura	LC
4	Rock Agama	Laudakia nupta	LC
5	Brilliant Agama	Trapelus agilis	LC
6	Keeled Rock Gecko	Cyrtopodion scabrum	LC
7	Spotted Indian House Gecko	Hemidactylus brookii	LC
8	Indian Fringe-toed Lizard	Acanthodactylus antoris	LC
9	Indian Spiny tailed Lizard	Saara hardwickii	LC
10	Desert Monitor	Varanus griseus	LC
11	Common Krait	Bungarus caeruleus	LC
12	Buffo toad	Bufa stomaticus	LC
13	Kettering frog	Euphlyctis cyanophlyctis	LC
EN = Endangered, CR = critically endangered, VU = vulnerable, L C = least concern, N T = near threatened. R = Resident WV = Winter Visitor M = Migratory PM = Passage Migrant SV= Summer Visitor			

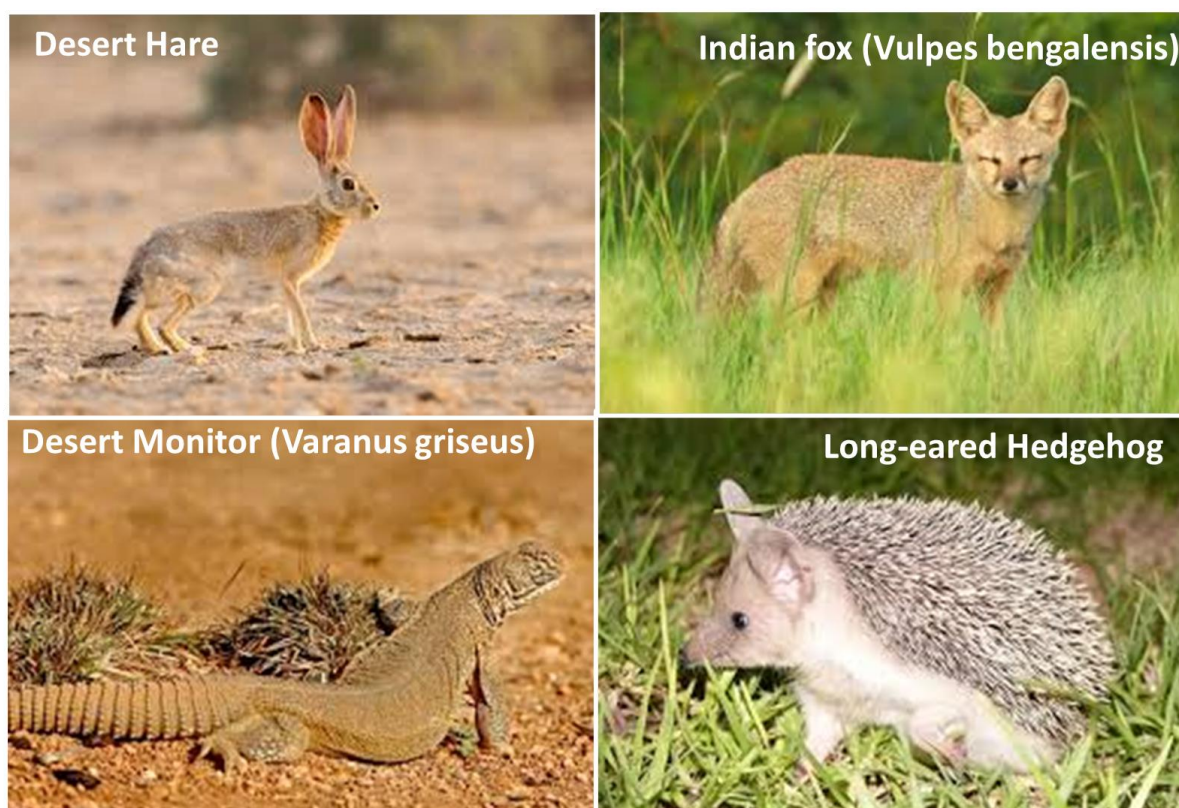


Figure 16: Some Fauna of the sub-project area

Table 17: Avifauna in Sub-Project Area

S. No.	Common Name	Scientific Name	Conservation status by IUCN
Birds			Seasonal Status
1	Black Kite	Milvus migrans	R
2	Shikra	Accipiter badius	R
3	Asiatic Sparrow-Hawk	Accipiter nisus	WV
4	Common Buzzard	Buteo	WV
5	White-eyed Buzzard Eagle	Butastur teesa	R
6	Imperial Eagle	Aquila heliaca	WV
7	Tawny Eagle	Aquila rapax	R
8	Egyptian Vulture	Neophron percnopterus	R
9	Laggar Falcon	Falco jugger	R
10	Peregrine Falcon	Falco peregrinus	WV
11	Pallid Merlin	Falco columbarius	WV
12	Common Kestrel	Falco tinnunculus	WV/r
13	Grey Partridge	Francolinus Pondicerianus	R
14	Red Wattled Lapwing	Vanellus indicus	R
15	Chestnut-Indian Sandgrouse	Pterocles exustus	R
16	Blue Rock Pigeon	Columba livia	R
17	Ring Dove	Streptopelia decaocto	R
18	Red Turtle Dove	Streptopelia Tranquebarica	R
19	Little Brown / Senegal Dove	Streptopelia senegalensis	R
20	Rose ringed Parakeet	Psittacula krameri	R
21	Common Crow-Pheasant	Centropus sinensis	R
22	Spotted Owlet	Athene brama	R

S. No.	Common Name	Scientific Name	Conservation status by IUCN
23	Longeared Owl	Asio otus	WV
24	Syke's or Sind Nightjar	Caprimulgus Mahrattensis	R
25	House Swift	Apus affinis	R
26	Indian Pied Kingfisher	Ceryle rudis	R
27	White breasted Kingfisher	Halcyon smyrnensis	R
28	Sind Small Green Bee- eater	Merops orientalis	R
29	Roller or Blue Jay	Coracias benghalensis	R
30	Hoopoe	Upupa epops	WV
31	Sind Woodpecker	Picoides assimilis	R
32	Ashycrowned Finch-Lark	Eremopterix grisea	R
33	Indian Desert Finch-Lark	Ammomanes deserti	R
34	Crested Lark	Galerida cristata	R
35	Indian Bush Lark	Mirafra erythroptera	R
36	Common Swallow	Hirundo rustica	WV
37	Rufous-tailed or Isabelline Shrike	Lanius isabellinus	WV
38	Grey Shrike	Lanius excubitor	R
39	Rufous-backed Shrike	Lanius schach	R
40	Black Drongo or King Crow	Dicrurus adsimilis	R
41	Rosy Starling or Rosy Pastor	Sturnus roseus	PM
42	Bank Myna	Acridotheres ginginianus	R
43	Indian Myna	Acridotheres tristis	R
44	Tree Pie	Dendrocitta vagabunda	R
45	Sind House Crow	Corvus splendens	R
46	Common Raven	Corvus corax	R

EN = Endangered, CR = critically endangered, VU = vulnerable, L C = least concern, N T = near threatened. R = Resident WV = Winter Visitor M = Migratory PM = Passage Migrant SV= Summer Visitor.



Figure 17: Some avifauna of the sub-project area

4.3.2. Flora of Sub-Project Area

A comprehensive depiction of the diverse flora found in the sub-project area is carefully presented in **Table 18** along with conservation status by the IUCN. Moreover, **Figure 18** shows some of the flora in the subproject area.

Table 18: Flora in Sub-Project Area

S. No.	Common Name	Scientific Name	Plant type	IUCN status
1	Sindhi Babur	Acacia nilotica	Tree	LC
2	Kumbat	Acacia senegal	Tree	NA
3	Lamb gaah	Aristida funiculata	Grass	NA
4	Neem	Azadirachta indica	Tree	LC
5	Ak	Calotropis procera	Shrub	NA
6	Kirar	Capparis decidua	Shrub	LC
7	Dhaman	Cenchrus ciliaris	Grass	LC
8	Trooh	Citrullus colocynthis	Climber	NA
9	Gugur	Commiphora wightii	Tree	CR
10	Sussai	Convolvulus spinosus	Herb	NA
11	Chag	Crotalaria burhia	Shrub	NA
12	Drabh	Desmostachya bipinnata	Grass	LC
13	Thohar	Euphorbia caducifolia	Shrub	NA
14	Khip	Leptadenia pyrotechnica	Shrub	LC
15	Pesh	Nannorrhops ritchiana	Tree	NA
16	Ghander	Ochthochloa compressa	Grass	NA
17	Dhaman	Panicum turgidum	Grass	NA
18	Nar khip	Periploca aphylla	Shrub	LC
19	Kandi	Prosopis cineraria	Tree	NA
20	Kikar	Prosopis juliflora	Tree	NA
21	Wekho	Pteropryum aucheri	Shrub	NA
22	Sar	Saccharum spontaneum	Grass	LC
23	Jar/Peroon	Salvadora oleoides	Tree	NA
24	Rohiro	Tecomella undulate	Tree	NA
25	Lawo	Tamarix aphylla	Tree	NA
26	Lawo	Tamarix dioica	Shrub	NA
27	Lai	Tamarix indica	Shrub	NA
28	Paneer	Withania coagulans	Shrub	NA
29	Ber	Ziziphus mauritiana	Tree	LC
30	Ber	Ziziphus nummularia	Shrub	NA
LC= Least Concern, NA= Not Assessed, CR=Critically Endangered				

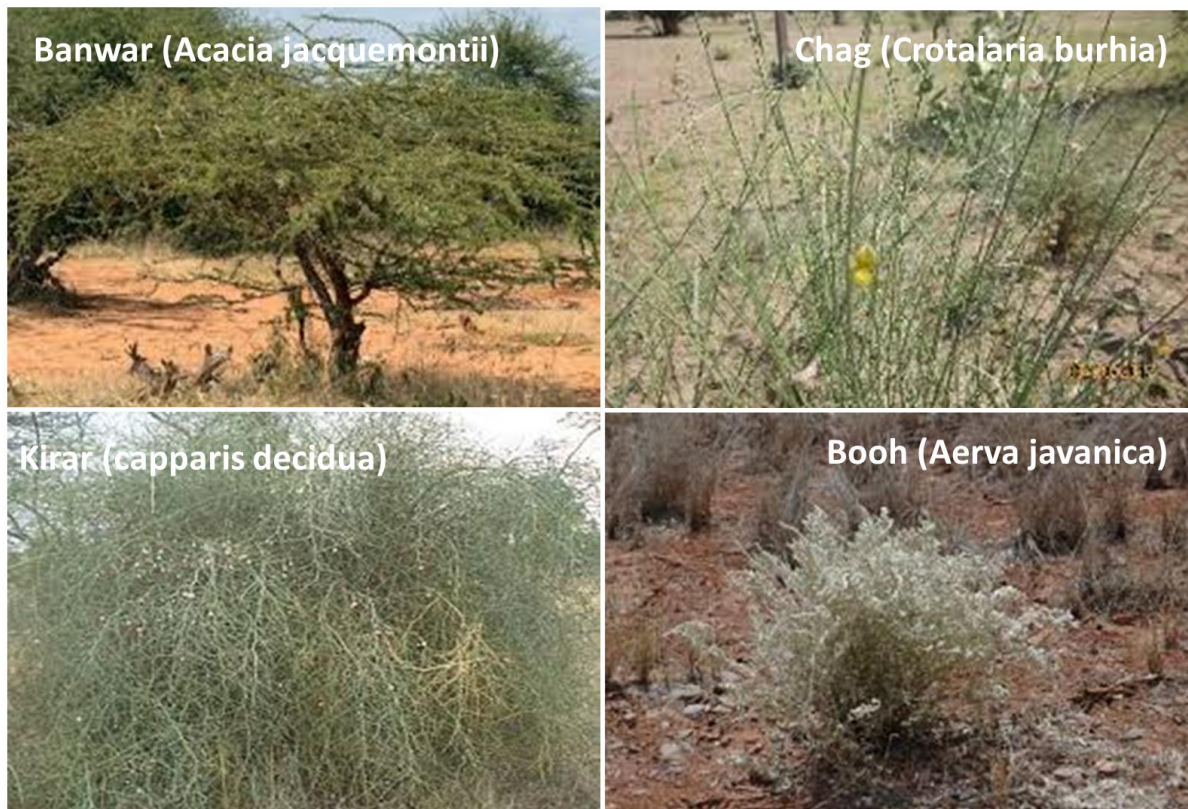


Figure 18: Some flora of the sub-project area

4.3.3. Endemic and Endangered Species

Within the confines of the sub-project area, it is pertinent to underscore that none of the indigenous or endangered species, be they flora or fauna, have been observed within the designated project site. Furthermore, the proposed project area does not encompass the requisite habitats for these particular species. The sub-project site does not lie in any protected areas or wildlife sanctuaries (**Figure 19**).

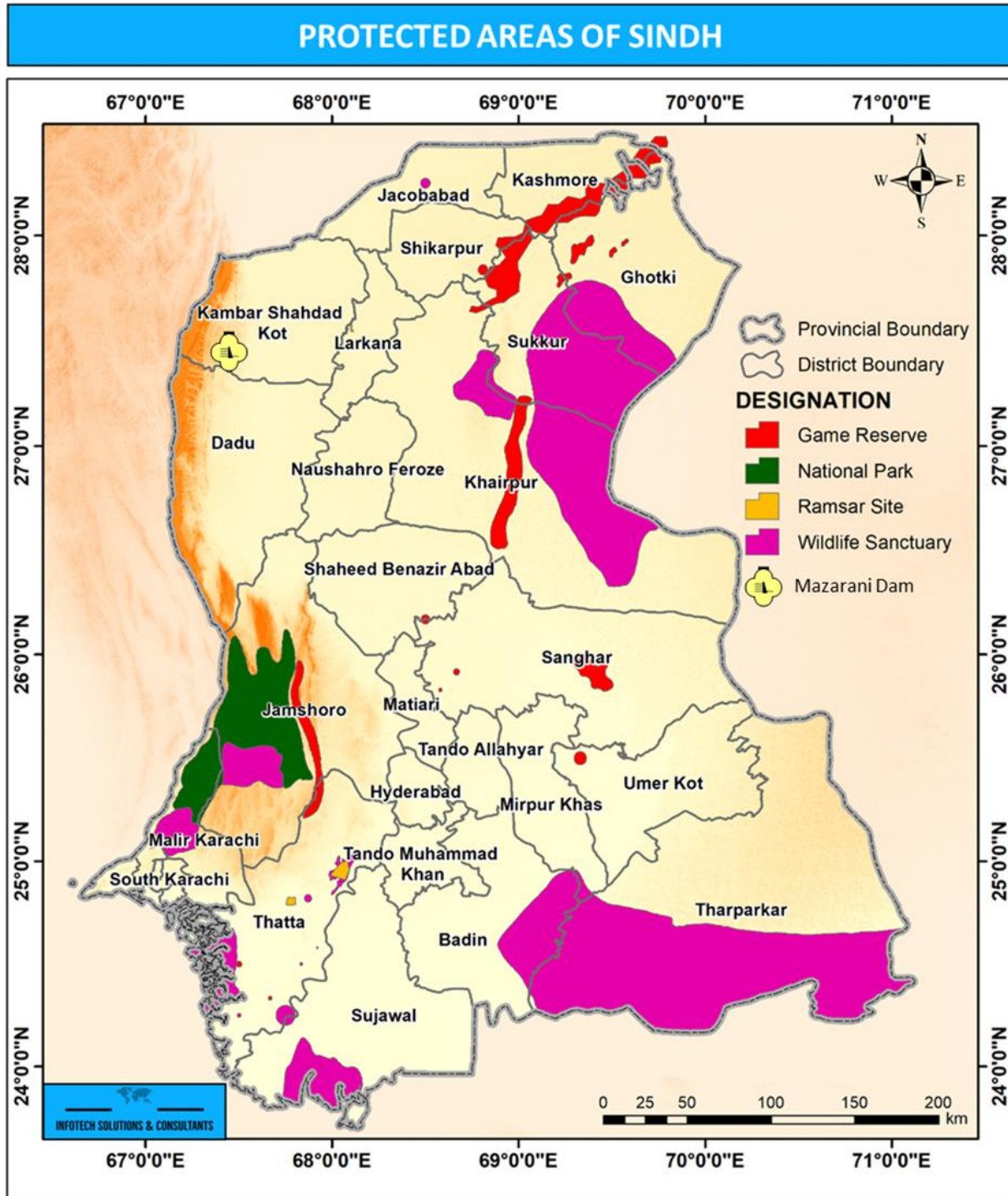


Figure 19: Protected Areas of Sindh

SOCIAL BASELINE



5. THE SOCIOCLIAL BASELINE

5.1. Methodology

This section delineates the socio-economic conditions prevailing in the designated subproject area. The socio-economic survey and assessment of social impacts were conducted throughout the months of October 2024. The team employed a comprehensive approach utilizing a questionnaire and checklist for conducting Focus Group Discussions (FGDs). To ensure a thorough understanding and collection of detailed information, consultation meetings were arranged with both stakeholders and the general public.

The primary objectives of these consultation sessions were twofold: first, to furnish stakeholders with a platform to articulate their concerns and proffer suggestions to the project team, and second, to instill a collective sense of ownership for the sub-project activities. Participants in these consultation meetings and Focus Group Discussions actively contributed to the data collection process and facilitated a deeper comprehension of the socio-economic landscape within the subproject area.

The socio-economic survey was undertaken to collect the following information:

- Demographic data, (population and literacy levels)
- Socio –Cultural fabric (Ethnicity, Language, religion, and vulnerability).
- Access to civic facilities (water, sanitation, health, education, and communication)
- Assessment of the impact of the proposed sub-project on the subject population
- In case of negative impacts are exposed, suggest mitigation measures.
- Occupations. Source of Livelihood and Income Levels

A survey and consultation was carried out in different village/settlement namely Goth Shah Muhammad Rind and Goth Mehoon Khan Rind. There is sparse population in the vicinity of sub-project. The only village that found nearby was around 3.2km away from sub-project site. The purpose of this survey was to establish a social baseline for the designated project area. The selection of village was predicated on their strategic location within the corridor of impact, anticipating direct effects on the sub-project. The school, mosque, and public infrastructure photographs taken during the survey are shown in **Figure 20**. A list detailing the locations of the visited villages is presented in **Table 19**.

The data sought aims to aid in gauging and delineating both positive and negative impacts on social services, livelihoods, and cultural patterns within the studied population. To enhance the depth of analysis, qualitative data was additionally gathered through the conduit of Focus Group Discussions (FGDs).

Participation in these Focus Group Discussions (FGDs) included attendance from village elders, community activists, farmers, herders, and religious leaders (Imams). In each village, distinct FGDs were organized for both male and female participants, ensuring comprehensive coverage of gender-specific dimensions of vulnerability.



Figure 20: Mosques, School and public infrastructure in the sub project area

Table 19: Village Visited for Socio-Economic Baseline

S.No	Village	Distance from the site (km)	Zone	Tehsil	District	Coordinates	
						Northing	Easting
1.	Goth Shah Muhammad Rind	3.24	Secondary	Warah	Kamber Shahdad Kot	27° 21' 11.70"	67° 32' 22.94"
2.	Goth Mehoon Khan Rind	6.22	Secondary	Warah	Kamber Shahdad Kot	27° 22' 15.34"	67° 33' 42.51"

5.2. Demographic Information of Sub-Project Area

5.2.1. Family System and Population

The prevailing demographic structure in the designated study locale predominantly comprises nucleus families, characterized by the residence of married adult offspring in separate households from their parents. Nevertheless, there exists a minority demographic of individuals inhabiting extended families, wherein parents cohabit with their married children and respective families.

The escalating prevalence of nucleus families can be attributed to the imperative for newlywed couples, especially adult married sons, to assume financial responsibilities. This paradigm shift arises from the exigencies imposed by the escalating cost of living, a burden deemed unsustainable for the parents of these adult married couples. Insights gleaned from the

participants in focus group discussions underscore that within nucleus family dynamics, the newly married couples confront the unvarnished realities of life. This necessitates a concerted effort to secure financial independence and self-sufficiency, thereby mitigating a perpetual reliance on their parental support.

This shift in family structures is not merely a socio-economic response but a conscious and pragmatic adaptation to the challenges posed by contemporary living costs. The discourse within focus group discussions sheds light on the palpable societal shift towards promoting individual agency, economic self-reliance, and an earnest confrontation with the exigencies of life for newlywed couples within nucleus family units. The inhabitants living in the village belongs to Rind tribe. The details of the populatios and tribe in sub-project area are given in **Table 20**.

Table 20: Population and Tribes on Sub-project

Sno	Village	Tribe	Religion	Household	Population
1	Goth Shah Muhammad Rind	Rind	Islam	56	336
2	Goth Mehoon Khan Rind	Rind	Islam	47	258
	Total			103	594

5.2.2. Housing

The housing landscape in the sub-project area presents a diverse array of dwellings, characterized by a mixture of housing types. Villages constitute the predominant settlement along the primary impact corridor, while Pakka Houses are more prevalent in the secondary impact corridor. Villages vary in size, ranging from small hamlets to larger communities. Housing structures are typically constructed using mud or kacha bricks, with roofs made of wooden materials and straw, and the majority of residents own their homes.

In villages, residences are marked by compound walls and spacious open areas surrounding rooms and animal shelters. Each village includes an Autak, serving as both a communal meeting space and a guest house primarily for male visitors. The tradition of hospitality thrives in these villages, with guests and travelers generously provided complimentary food and lodging at the Autak.

The presence of Kacha homes in specific villages is linked to financial limitations, as participants observe that these dwellings provide a cool retreat amidst sweltering summer temperatures. Such villages frequently feature spacious open areas devoid of boundary walls. **Figure 21** provides visual insights into the distinctive housing patterns found in the area.



Figure 21: Housing Structure near Sub-Project Site

5.3. Socio–Cultural Information of Sub-Project Area

5.3.1. Social Cohesion and Conflict

The principal tribes prevalent in the sub-project area encompass Baloch, Sindhi, and Rind. The surveyed village is homogeneous, mono-tribal communities with a social structure deeply rooted in the tribal system. Each tribe is led by a tribal leader, who often serves as a landlord and political figure, holding significant influence. Interactions are strong within the same tribe, with a preference for intra-tribal marriages, while ties with other tribes remain limited. The community collectively builds and maintains mosques. The socio-economic survey found no major conflicts in the subproject area; minor disputes, typically related to matrimony or property, are resolved at the village level by the village head or senior members. These localized resolutions are widely accepted, with rare recourse to law enforcement or judicial intervention.

5.3.2. Social Vulnerability

Social vulnerability refers to the systemic inequalities within social systems that systematically marginalize and discriminate against specific groups, obstructing their access to necessary resources and services. Individuals marginalized in social, economic, or political contexts are particularly prone to vulnerabilities. The interconnection between disasters, poverty, and vulnerability becomes evident when considering that individuals experiencing poverty have limited resilience in the face of natural disasters, leading to disproportionate impacts.

In the scrutinized villages, the tumultuous rains and ensuing floods in 2022 significantly exacerbated the existing levels of poverty and vulnerability prevalent in the subproject area. The modest assets held by the majority of the population in this region suffered damages, and their traditional sources of income from agriculture and livestock were disrupted. This exacerbation has intensified the already precarious conditions facing the residents.

The survey revealed a significant revelation: a considerable portion of the population in the sub-project area struggles with a lack of job opportunities, as well as inadequate access to essential health and education facilities. This scarcity amplifies social vulnerability to various hazards, including challenges posed by both floods and droughts.

5.3.3. Languages

The primary languages spoken by most residents are Sindhi, while Urdu, the national language, is also widely understood by a substantial portion of the population in the sub-project area. Furthermore, several inhabitants are also proficient in Balochi language.

5.3.4. Religious Affiliation

During the socio-economic field survey, noticeable trends emerged, indicating that the majority of the population in the designated sub-project area follows the Muslim faith. This demographic composition is evident through the presence of mosques, which are found in most villages within the area. Visual representations of these religious edifices can be found in **Figure 22**.

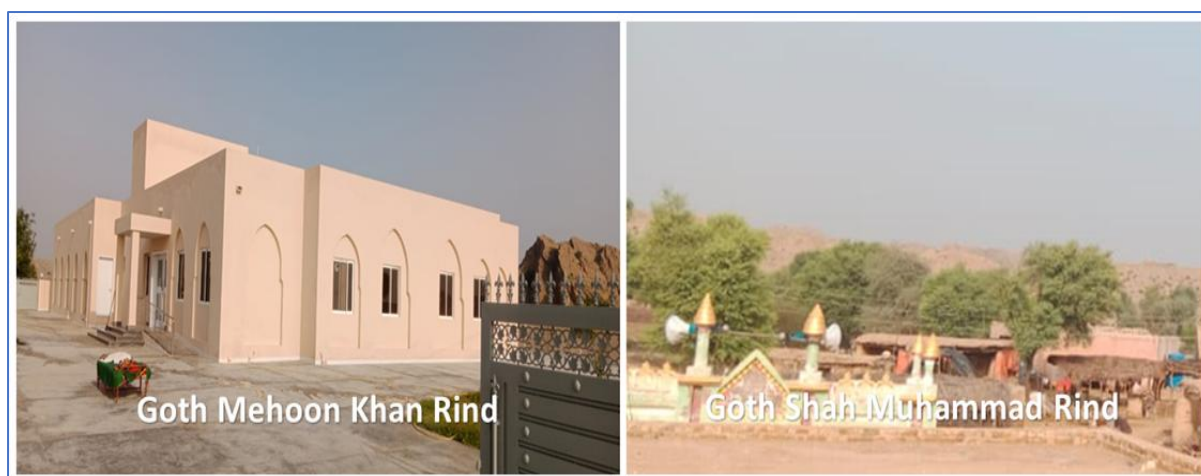


Figure 22: Religious Settings near Sub-Project Site (Mosque)

5.4. Occupations, Sources of Livelihood and Income Levels

In the study area of the sub-project, agriculture and livestock serve as the primary sources of income for the residents. According to participants in the Focus Group Discussions (FGDs), during periods of abundant canal water, they experienced bumper crops, with livestock productivity also thriving. This prosperity led to well-being among farmers and their families. However, a gradual decline in irrigation water availability has left a significant portion of land unproductive, pushing more people below the poverty line. Elderly participants in the FGDs mentioned that heavy rains, once considered a blessing, have now become detrimental,

resulting in widespread loss of livelihoods. The recorded monthly family incomes in the sub-project area ranged from PKR 15,000 as the lowest to PKR 28,000 as the highest.

Livestock farming, including cattle, goats, and poultry, plays a prominent role, adding a dynamic element to the economic fabric. Trade and commerce are pivotal, evident through the presence of small businesses, shops, and markets that cater adeptly to the community's unique needs. However, services such as healthcare, education, and professional services are not yet satisfactory. Construction emerges as a visible economic force in the subproject area, driven by urbanization and development. Government employment and transportation-related activities further bolster the livelihoods of the local population. This intricate interplay of economic sectors underscores the multifaceted and dynamic nature of the district's economic landscape.

5.5. Utilities (Drinking water & sanitation, electricity and gas facility, transportation facility or alternate sources)

5.5.1. Source of Drinking Water

In the sub-project area, the fresh water is available. Hand pumps and tube wells are the main sources of drinking water. A noteworthy observation during the survey was the responsibility of women and children for procuring water, navigating distances based on the availability of water sources within and beyond the village.

5.5.2. Sanitation

On the sanitation front, the surveyed villages revealed a glaring absence of a structured sanitation system. Open defecation is prevalent in most locales, with only a minor fraction of households equipped with latrines. The majority of women resort to nearby bushes or makeshift latrines, fostering unhygienic conditions. Regrettably, children also engage in open defecation within residential premises and on streets, contributing to the propagation of diseases like diarrhea.

5.5.3. Electricity and Gas Facility

The settlements in the sub project area have no excess to fundamental amenities like electricity and gas connections. However, some households have opted for solar panels, provided they can afford the investment. Some tube wells in the sub project area are also operated with the solar panels (**Figure 23**).



Figure 23: Alternate Energy Sources in Sub-Project Area

5.5.4. Transportation Facility

The road conditions were acceptable. The primary and commonly accessible means of transportation for poor individuals include, motorcycles and rickshaws for short distances. Motorcycles are predominantly utilized in areas where connecting roads are paved, while local people also used motorcycles on unpaved pathways. In the course of community consultations, participants revealed that a substantial portion of the economically disadvantaged population faces challenges in affording motorbikes. Those without access to motorbikes resort to travel via rickshaw (chingchi) or on foot, underscoring the economic constraints influencing transportation choices in the area. Pictorial view of transportation facility in the sub-project area is depicted in **Figure 24**.



Figure 24: Transportation facility in the Sub-Project Area

5.6. Education

The socio-economic survey revealed a notable lack of educational opportunities in the villages. Their geographical isolation restricts access to schools and educational resources, creating significant barriers for residents, especially children, to obtain quality education. **There is only one government boys primary school present in the entire location.**



Figure 25: Educational Facility in Sub-Project Area

5.7. Health Facility

There are no health facilities in the sub-project area, making access to healthcare particularly challenging. Residents must travel 15-25 kilometers to reach major hospitals in Taluka or district centers, which imposes a financial burden due to transportation costs. This lack of local healthcare exacerbates the impact of prevalent diseases like typhoid, malaria, eye problems, and diarrhea, severely affecting the community's well-being.

STAKEHOLDER CONSULTATION



6. STAKEHOLDER CONSULTATIONS

6.1. Stakeholder Selection

To disseminate comprehensive information about the project and to instill the sense of trust among the stakeholders, timely communication regarding the proposed project, its potential environmental and social impacts, and the deliberate pursuit of informed inputs are instrumental.

To guarantee focused and meaningful participation in the rehabilitation works of Sub-project, stakeholders are classified as follows:

1	Affected Parties	The groups directly impacted, either currently or potentially, by the rehabilitation works in sub-project area. Close engagement is essential for these parties, which includes local community members and other entities directly affected by the project.
2	Other Interested Parties	The entities having interest in the project activities including individuals, groups, or organizations that don't experience direct effects from the rehabilitation works in sub-project area. However, they play a crucial role in identifying potential risks, impacts, and opportunities.
3	Disadvantaged/Vulnerable Individuals or Groups	The individuals or groups who are highly susceptible to potential project impacts. Frequently lacking the means to voice their concerns or comprehend the project's impact and risk, these individuals or groups face heightened vulnerability.

6.2. Selected Stakeholders of the Sub-project

Table 21 shows the classification of all the selected stakeholders of the sub-project along with impact level of sub-project activities on them respectively.

Table 21: Classification of the stakeholders of the sub-project with their impact level

Sector	Identified Stakeholders	Classification*			Impact Level
		AP	OIPs	VE	
Government of Sindh	Sindh Irrigation Department		✓		High
	Agriculture Department		✓		High
	Livestock Department		✓		High
	Provincial Disaster Management Authority, Sindh		✓		High
	Food Department		✓		High
	Health Department		✓		Low
	Local Government Department		✓		Medium
	School Education & Literacy Department		✓		High
	Environment, Climate Change & Coastal Development Department		✓		High
	Local leadership in affected areas		✓		High
Private	Social Protection Unit and Social Welfare Department, Sindh		✓		Medium
	Public Transporters		✓		High
	Poultry Farmers and Traders		✓		Medium
Community	Veterinary service providers		✓		High
	Villagers and residents of towns who lost their houses, crops and other assets, and livelihoods	✓			High
	Agriculture farmers and workers	✓			High
	Farmers Organizations/ Water Users Associations	✓			High

Sector	Identified Stakeholders	Classification*			Impact Level
		AP	OIPs	VE	
	Livestock/dairy farmers	✓			High
	General Public		✓		High
	Women agriculture and livestock farmers			✓	High
	Elderly people			✓	High
	Illiterate persons			✓	Medium
	Women Artisans			✓	High
	Ethnic/religious/gender minorities			✓	High
	People with special needs such as Pregnant women, children, and those in poor health			✓	High
Others	Local NGOs involved in disaster response work		✓		High
	Donor organizations		✓		High
*Affected Parties (AP)/Other Interested Parties (OIPs)/ Vulnerable Entity (VE) Individual and Groups					

6.3. Stakeholder Engagement

The community stake holder's engagement was performed as described in the following steps:

- Before engaging in the community-level consultations, the team of social and environmental specialists visited each village within the sub-project area to select the active Community Focal Points (along with their required contact information), ascertaining the existence of any social organizations or individuals actively engaged in community affairs. In addition to the primary Community Focal point, the team also obtained two alternative point of communication.
- With the help of Community Focal Points, the team provided comprehensive information about the forthcoming community consultations in the respective villages.
- Subsequently, three days before the scheduled consultations, the team ensured the specific venue and timing of the consultation by informing the relevant communities through the Community Focal Points.
- Besides the above, a field team comprising Environment and Social Safeguard Consultants and dedicated staff from pertinent sub-divisions of the Sindh Irrigation Department (SID), visited the neighboring villages of the sub-project to collect the insights and perspectives of the individuals who stand to be both affected and beneficiaries of the upcoming initiatives.
- In October 2024, thorough consultations were conducted focusing on the planned sub-project activities and their impacts on the community's well-being. During these consultations, GBV, SEA/SH, and gender equality topics were also disclosed to the community along with the zero-tolerance policy related to GBV and SEA/SH.

Comprehensive consultations were conducted, as evidenced by the captivating visual documentation in **Figure 26**, featuring male community members actively engaged in the discourse, with a detailed village breakdown provided in **Table 22**.



Figure 26: Photographs captured while consulting male of the villages

Table 22: Table showing number of male community members consulted from each village

Sno	Name of Village	Date of Consultation	No's of Participants	Person with Disability
1.	Goth Shah Muhammad Rind	28/10/2024	16	0
2.	Goth Mehoon Khan Rind	28/10/2024	12	0
	Total		28	0

Some comments/observations from the males of the community along with actions/ responses are presented in **Table 23**.

Table 23: Comments/Observation during male consultation along with action/response

Comments /Observations	Action /Response
Male participants expressed their concern about road closures and the inconvenience caused by construction activities, emphasizing the challenges in movement.	They were assured that the contractor would implement comprehensive traffic management measures at the site, including the provision of adequate road signage and traffic aids to mitigate any inconvenience caused by the construction activities. Further traffic management mitigation measures are detailed in the CESMP, and it is mandatory for the contractor to

Comments /Observations	Action /Response
	adhere to these measures for traffic control.
Male participants emphasized the importance of job opportunities, especially for unskilled labor in the subproject, due to the limited livelihood options available.	They were informed that the contractor must hire local workers without specific skills, promising them chances for jobs within the subproject.
Male participants shared concerns regarding the potential disruptions to the privacy of local residents stemming from the establishment of Labor camp and parking areas in close proximity to their settlements. They emphasized the importance of considering this issue with sensitivity to gender dynamics, noting that it could have differential impacts on various community members.	They were assured that the camp would be located away from the village, alleviating worries about possible disruptions to local privacy.
The participants stressed the significant problem of villagers not having enough access to water, emphasizing that fixing this issue should be a top priority along with other basic needs	Noted
The male participants stated during consultation that the successful implementation of the Sub-Project would serve as a crucial barrier against future floods, lessening the need for relocation. They highlighted that these endeavors would play a central role in safeguarding their livestock, homes, crops, and other communal assets from potential flood damage.	Noted
The villagers were hopeful about the sub-project's rehabilitation work in their area, believing it would bring prosperity. They sincerely asked for steps to be taken to provide education and health facilities in the region	Noted
The contractor is required to commence plantation on both sides of the project route.	Noted

In adherence to local cultural norms that advocate for separate gatherings of males and females, dedicated consultations were orchestrated for the female members of the relevant communities, facilitated by female resource personnel from the project side.

A list of villages visited during community consultation with women is given in **Table 24** while photographs are shown in **Figure 27**.



Figure 27: Photographs captured while consulting female of the villages

Table 24: Table showing number of female community members consulted from each village

Sno	Name of Village	Date of Consultation	No. of Participants	Person with Disability
1.	Goth Shah Muhammad Rind	28/10/2024	28	0
2.	Goth Mehoon Khan Rind	28/10/2024	23	0
	Total		51	0

Some comments/observations from the females of the community along with actions/responses are presented in **Table 25**.

Table 25: Comments/Observation during female consultation along with action/response

Comments /Observations	Action /Response
Female participants show concerns that their privacy might be compromised due to increased labor influx while they carry out tasks such as collecting firewood, tending to grazing cattle, and fetching water amidst the ongoing subproject work	The camp will be far from the settlement, so women and children won't be disturbed. New employees will receive cultural immersion and sensitivity training as part of their orientation. Additionally, a clause will be included in the contract/document stating that there should be no

Comments /Observations	Action /Response
	interaction between laborers and women and children.
Participants mentioned they lack sufficient information about the subprojects	Participants received detailed information about the sub-project during community consultation meetings and focus group discussions
The female participants said that during the floods in 2011 and 2022, they had to leave their homes and it was very hard for them. Construction of the subproject would help keep them safe from floods in the future.	Noted
Female participants stated that completing the subproject would shield them from future floods, sparing them from displacement. They emphasized that the subprojects would also safeguard their livestock, homes, small businesses, crops, and other community assets from flood damage.	Noted.

Keeping in view the comments and responses it is very essential that the concerns of people may be addressed by applying good governance and management practices before and during the construction work.

6.4. Consultation with Institutional Stakeholders

Institutional consultations were held with representatives from government departments and prominent NGOs dedicated to environmental conservation. During these stakeholder discussions, the identified institutional stakeholders were informed about the key aspects of proposed sub-project, and their feedback on the sub-project was sought. Name of participants along with institution name are attached as Annexure IV. A summary of the concerns raised by institutional stakeholders is presented in **Table 26**.

Table 26: Summary of concerns raised by institutional stakeholders

Comments/Observations	Actions Responses
The stakeholders suggested that the project proponent assist local communities in planting trees nearby. These trees should be selected for their ability to improve the area's greenery.	The planting will prioritize local species, with no promotion of alien species.
The stakeholders suggested that the construction camp be adequately fenced.	Barricaded camp has been proposed for the camp, and activities will be confined within the designated boundary area.



Comments/Observations	Actions Responses
The stakeholders stated that the rehabilitation work would enhance socio-economic condition of people in the sub-project areas.	Noted
The stakeholders commented that the rehabilitation work would make communities stronger against the effects of climate change	Noted
The stakeholders suggested that precautions should be taken to protect fauna and flora during the construction phase.	The campsite will take minimum space and will be placed in open areas. Labor won't be allowed to use local plants for fuel. They will also be trained not to hunt and to protect plants and animals.
The stakeholders commended the Sindh Irrigation Department for undertaking irrigation and drainage works in the Sub-Project area. These efforts aim to safeguard local communities and public infrastructure from potential future floods.	Noted
The stakeholders recommended that during the construction phase, local traditions and customs should be valued and respected. Additionally, it was suggested that the camp office should be established away from the villages/settlements.	It was assured that local cultural values and traditions would be fully respected, and site camp would be established away from the villages.
The stakeholders suggested the construction of local road pavements for the benefit of the local communities, enabling easier movement for residents.	Noted

6.5. Information Disclosure

As a disclosure requirement, the Environmental and Social Management Framework (ESMF) has been disclosed on the SFERP Sindh Irrigation department website (<https://sferpirrigation.gos.pk>), while after approval from the World Bank, an executive summary of the Environmental Impacts Assessment (EIA) will be translated into Sindhi and same will be disclosed on the SFERP website i.e. <https://sferpirrigation.gos.pk>. Additionally, physical copies of EIA documents will be provided at the sub-project sites for wider accessibility.

IMPACT AND MITIGATIONS



7. ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATIONS

7.1. Environmental and Social Risks and Impacts of Sub-Project

The **Table 27** below shows all the anticipated environmental and social risks and impacts of sub-project activities based on the significance criteria. In addition, Initial screening checklist is also attached as Annexure IV.

Table 27: Environmental and Social Risks and Impacts

Anticipated E&S Risks and Impacts		Significance		
		High	Medium	Low
1	Air Pollution			
2	Noise Pollution			
3	Trees Cutting			
4	Water Pollution			
5	Soil Erosion			
6	Solid Waste			
7	Disturbance to Eco-system			
8	Traffic Congestions and Road Closures			
9	Labor Influx			
10	Forced Labor and Child Labor			
11	GBV and SEA/SH			
12	Communicable Diseases			
13	Occupational Health and Safety			
14	Physical/Community Infrastructure			
15	Chance Findings of Important Physical and Cultural Resources			

7.2. Environmental Impacts and Mitigations of Sub-Project Activities

A brief description of significant environmental impacts and their suggested mitigation measures is given below

7.2.1. Air Pollution

A. Impacts (Include Batching Plant impacts)

During the construction phase of the proposed sub-project, the potential for adverse environmental impacts, particularly from suspended dust and noise, is acknowledged.

The air quality is anticipated to be disrupted during construction due to vehicular movement, with the release of particulate matter PM_{2.5} from vehicle emissions. Construction activities, including earthwork operations, are expected to generate dust, contributing to pollution in the surrounding area. Emissions from the machinery employed in these activities will further degrade the air quality at the site. The release of noxious gases from the movement of heavy machinery poses an additional threat to air quality,

potentially affecting the health and vitality of plants. Furthermore, smoke emissions resulting from batching plant, vehicular movement and heavy machinery may slightly contribute to smoke-related issues in the nearby villages situated close to the construction areas.

B. Mitigation Measures

Throughout the construction phase of the proposed sub-project, there is an anticipation of potential environmental drawbacks in the form of suspended dust and noise emissions. The contractor shall implement the following preventive measures to overcome the negative environmental impacts:

- Regularly spray water to minimize the potential dust pollution. Grey water from labor camp should be used for spray. If greywater is insufficient than water from nearby water bodies should be utilize. Only if no such water sources are available in the proximity than tube well water may be utilized for spray to minimize dust pollution.
- Regularly maintain and keep all construction related vehicles, machinery, equipment, and generators in good working conditions to minimize exhaust emissions and limit the idling time of construction vehicles to 3 to 5 minutes to minimize local air pollution.
- Implement the speed limit of 10 km/h for construction vehicles will minimize the emission of dust particles.
- Periodically carry out air quality monitoring and compare the obtained results with either the baseline monitoring data or the Sindh Environmental Quality Standard (SEQS) to ensure the successful implementation of the proposed mitigation measures.

7.2.2. Noise Pollution

As delineated in **Table 8**, the rehabilitation endeavors necessitate the incorporation of Lean Concrete, Mass Concrete, and Reinforced Concrete Cement (RCC) work. Consequently, a careful strategy has been devised for the installation of a batching plant. The batching plant infrastructure comprises essential components, including mixers, storage silos, conveyor belts, control systems, and auxiliary apparatus. The orchestration of these elements demands precision in positioning and connectivity.

Batching plants conventionally house provisions for cement, aggregates (such as sand, gravel, or crushed stone), and potentially additives or admixtures. These materials find their designated spaces within separate bins or silos, from where they are adeptly conveyed to the mixing area through the orchestrated movement of conveyor belts or other sophisticated mechanisms. This strategic setup ensures seamless integration and optimal functionality, underscoring the intricate planning involved in the deployment of batching plant equipment for the comprehensive rehabilitation efforts.

A. Impacts (Include Batching Plant impacts)

An elevation in noise levels may result from excavation activities, notably the breaking of concrete, the operation of construction equipment such as batching plant, concrete mixers, and the movement of equipment, materials, and personnel. Vibrations produced by construction activities, such as the use of pneumatic drills, will exert an influence on nearby

structures. While this impact is adverse, it is of a short-term nature and can be effectively addressed through mitigation measures.

B. Mitigation Measures:

The contractor shall implement the following preventive measures to overcome the negative environmental impacts:

- Plan all the construction activities in consultation with PIU so that activities with the greatest potential to generate noise could be conducted during the daytime periods to result in the least noise disturbance.
- Horns shall not be used unless necessary.
- Limit the working hours between 9 am to 5 pm, for six days a week (which could be altered according to the weather conditions with special reference to the summer seasons. Breaks will be considered during peak time 2 pm to 5 pm).
- Conduct noise monitoring every month as recommended in the EMP as per SEQS. Despite this, the affected communities may also require demand to carry out monitoring in case of any complaint.
- Control noise levels of all the construction machinery and take measures to limit the levels within SEQS, as far as possible and the workers will be provided earmuffs, where necessary.
- Provide suitable personal protective equipment (PPEs) to all the relevant construction workers e.g., ear plugs and ear muffs etc.
- Minimize the noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and using portable street barriers to minimize sound impact to surrounding sensitive receptors.
- The batching plant for sub-project construction activities shall be installed at a minimum distance of 500 meters from nearby residential area.
- The contractor shall ensure that the operation of batching plant shall strictly align with designated working hours only.
- The contractor will ensure regular sprinkling of water over the construction sites to mitigate the dust pollution effectively.
- The contractor is obligated to furnish a fitness certificate for the construction machinery at site, ensuring the absence of unacceptable vehicular emissions. Additionally, the contractor will ensure the quarterly assessments from SEPA registered laboratory, including carbon monoxide and smoke emission tests, as well as thrice-daily noise monitoring tests, and keep records of all the test results to maintain stringent environmental standards.
- Active engagement with the local community is paramount, addressing and assuaging their concerns through an inclusive and transparent dialogue. The contractor is responsible for this engagement through E&S team. In addition to that, monitoring and

supervision consultant are also responsible for this engagement. The role and responsibility have been defined in the CESMP Section 12.3 (Annexure IX).

- The contractor shall provide adequate personal protective equipment (PPE) to on-site workers, and ensure their consistent usage during work.
- In the event that the selected site proximity to settlement areas necessitates additional control measures:
 - a. Implementation of a Zero Emission Plant, featuring advanced technology such as computerized and automatic systems. This entails the use of washed aggregates and enclosed cyclones with an automated material injection system into the mixing chamber.
 - b. Construction and maintenance of the plant area on an impermeable layer to prevent water body contamination from surface runoff.
 - c. Regular application of water spraying on access roads used by delivery lorries passing through living areas to curtail dust pollution.

7.2.3. Water Pollution

A. Impacts

During the construction phase, various activities such as cutting, earthwork, and concrete work have the potential to negatively impact surface water quality, lead to over-extraction, influence water table levels, and contribute to increased salinization.

An additional concern will be the possibility of chemical, hydrocarbon, and other pollutant spillage occurring as part of the construction process, coupled with potential contamination stemming from improper disposal of both organic and inorganic wastes at camp and work sites. The groundwater, serving as a drinking water source in certain areas, will be at risk of potential contamination from the release of untreated sewage originating from construction camps and offices. This underscores the importance of addressing water contamination concerns arising from the spillage of liquid waste.

B. Mitigation Measures

The contractor shall implement the following preventive measures to overcome the negative environmental impacts:

- Establish own arrangements for water requirements, ensuring not to utilize existing community resources or extract from sources currently used by the local community. The Contractor will seek permission from the Irrigation Department and Sindh Irrigation and Drainage Authority to use local water resources for general construction purposes. Provide essential facilities at each campsite, including latrines, lined washing areas, and septic tanks with soaking pits for toilet waste.
- Construct proper septic tanks and soaking pits for sewage treatment at the worker camps.

- Construct proper soak pit in absorbent soil, at least 500m away from the water well. Both the Septic tank and soak pit shall be covered properly to avoid any obnoxious smell in the surrounding areas.
- At the time of restoration, septic tanks will be dismantled in place and backfilled with at least a 1m soil cover keeping in view the landscape of the surrounding natural surface.

As a mitigation measure, the contractor will implement the installation of a solar-powered domestic water filter with a capacity of 150 gallons per day (GPD) and equipped with Ultraviolet (UV) technology. This measure is aimed at guaranteeing the provision of safe and wholesome drinking water for the workforce. A spoils management plan will be devised under the supervision of the Project Implementation Unit (PIU) as below:

- The contractor will make necessary arrangements to ensure the drinking water quality at construction sites. The sampling and testing of drinking water from SEPA registered laboratory will be conducted on monthly basis right after the startup of construction activities. The testing results will be kept in records with the E&S team at sub-project site.
- Wastewater generated from laundry, kitchen washings, and showers will be directed to a separate soak pits.
- If soak pits reach full capacity, greywater will be dispersed over access tracks using a wastewater collection tanker. The dispersal will be executed in a manner that prevents water ponding.
- Water consumption will undergo continuous monitoring throughout the construction phase, with meticulous record-keeping to prevent any wastage.
- Proper storage of diesel, oil, and lubricants will adhere to petroleum regulations, with this responsibility falling under the purview of the contractor.

Additionally, prior to the commencement of construction, the contractor will undertake the establishment of an updated baseline environmental monitoring program encompassing air, water, and noise, along with soil analysis that includes trace metals such as Cd, Zn, Cu, Cr, Pb, and Ni, following the standards outlined by the World Health Organization (WHO). The permissible limits/standards indicated by the World Health Organization and the Food and Agriculture Organization of the United Nations (FAO) for soil (refer to Annexure VI), as well as the limits set by the Sindh Environmental Quality Standards (SEQS) for Air, Water, and Noise, will serve as benchmarks for the comparative analysis during the construction phase. Adequate measures will be implemented to prevent the displacement of stones and soil into the adjacent areas or any other surface water bodies as below:

- Stockpiling of earth fill material, particularly during the monsoon season, will be prevented by covering it with tarpaulins or plastic sheets.
- Waste disposal will be conducted at designated sites within the camp area.

- Any complaint from the community, regarding waste disposal, will be taken into account through the Grievance Redress Mechanism (GRM). The Community Liaisons Officer will ensure appropriate action to be taken in this regard.

7.2.4. Soil Erosion (Impacts of Borrowing Area/Site)

A. Impacts

The acquisition of supplementary soil for fortifying the embankments will involve excavation from a location designated by the contractor and sanctioned by the Project Implementation Unit (PIU).

B. Mitigation Measures

- The requisition of land for borrow areas will primarily be sourced from existing government-owned lands. In instances where privately owned parcels are necessary, equitable compensation will be extended to the landowner(s), contingent upon a prior written agreement with the local community or owner, in accordance with their customs and traditions. The compensation particulars, aligned with prevailing market rates, will be meticulously documented in agreements signed between landowners and relevant authorities. The borrow pits will be meticulously managed to prevent rendering them unusable, mitigating potential issues such as the accumulation of rainwater and the creation of breeding grounds for mosquitoes, thereby safeguarding the well-being of the community.
- Prior to initiating any soil removal, the contractor will commit to demarcating designated borrow areas, clearly articulating the allowable excavation depth. The pit perimeters will be rendered with flat slopes, and upon completion of excavation, efforts will be made to level the area to the greatest extent possible.
- In the selection of borrow areas, preference will be accorded to barren or infertile land over agricultural tracts. This strategic choice aims to minimize the impact on arable lands, thereby aligning with a sustainable and conscientious approach to land utilization.
- If agricultural land is deemed necessary for use as a borrowing area, the contractor will implement the following additional measures:
 - a. Excavation will be conducted at a minimum distance of 50 meters from the base (toe) of the embankments.
 - b. A layer of 6 inches from the topsoil will be carefully removed and preserved separately on-site for subsequent re-spread onto the leveled borrow area.
 - c. The excavation depth will be limited to a maximum of 3 feet, ensuring a balanced approach to land utilization.
 - d. Efforts will be made to level the slopes as extensively as possible, maintaining a harmonious integration with the surrounding landscape.

- e. Upon completion of the excavation, the preserved topsoil will be judiciously placed back onto the reasonably leveled area, promoting the restoration of the land's fertility and minimizing the disruption to agricultural potential.

7.2.5. Solid Waste (Waste Management)

A. Impacts

At the sub-project construction site, the volume of domestic waste generated will fluctuate based on the size of the contractor's workforce. Most laborers will be local, returning to their homes at the end of the working day. At the peak of construction activities, approximately 25% of the workforce, primarily consisting of skilled labor, will reside at construction camps.

B. Mitigation Measures

The proposed mitigation measures for solid wastes are as follows:

- The contractor will submit a comprehensive waste management plan, outlining construction waste management, to a supervisory consultant for thorough review and approval.
- The waste management plan has been already drafted and attached as Annexure IX which will be tailored by the contractor as per site location and subject to approval by PIU. This plan will delineate detailed procedures for the collection, transportation, and disposal of various waste streams, each managed separately. The implementation cost of all such plans will be the part of the bidding document.
- The contractor will avoid stockpiling large quantities of construction material within the project area to minimize disruption.
- No waste will be indiscriminately disposed of in the field; instead, all waste will be appropriately placed in designated waste bins within the working area.
- Combustible, noncombustible, and hazardous waste will be temporarily stored on-site in an approved designated area, as specified in the waste management plan. Subsequently, it will be handed over to SEPA approved waste contractors for recycling purposes and safe disposal.
- Staff will be actively encouraged, through training, to adopt practices that minimize waste generation and promote reuse wherever possible. The training will be conducted onsite and off-site by consultants E&S Specialist, and contractor E&S staff. The monitoring and supervision consultant and E&S staff of the contractor will be responsible for these trainings.
- The contractor will coordinate with local authorities to ensure the regular and efficient collection of camp waste, transferring it to the storage area or disposing of it in collaboration with the local administration. This liaison will be established by the contractor prior to the commencement of civil work. Designated locations for waste dumping, including construction debris and nonhazardous solid waste, will be established in consultation with the relevant Taluka Municipal authorities.

7.2.6. Traffic Congestions and Road Closures (Traffic Management)

A. Impacts

Elevated vehicular activities associated with the construction and transportation of raw materials to and from the batching plant pose the potential hazard of inducing traffic congestion in the surrounding areas of active sub-project construction site.

To navigate the potential traffic challenges effectively, the implementation of proper road signage and traffic aids at the site will be essential. Activities such as excavation along roads, transportation of construction materials, and on-site equipment operations possess the capacity to induce temporary negative impacts on traffic flow. Nevertheless, these effects are both short-term and reversible through the application of strategic mitigation measures.

B. Mitigation Measures

The construction contractor shall be mandated to:

- Deploy "ENTRY" and "EXIT" signage strategically at sub-project sites to effectively manage potential traffic congestion resulting from civil construction activities.
- Develop and execute a comprehensive Traffic Management Plan to proficiently address traffic-related challenges during the rehabilitation works within sub-project areas.
- Ensure unimpeded access at all sub-project sites by removing unnecessary obstructions. Coordination with Traffic/Local Police will be sought for temporary road diversions and the provision of traffic aids, particularly during peak hours when transportation activities cannot be feasibly avoided.
- Implement robust traffic management measures at the site, encompassing the provision of proper road signage and traffic aids. This includes the installation of temporary signals, deployment of skilled traffic guides, delineation of construction work lanes/worksites/excavation areas, and the separation of active/live traffic lanes from the operational construction sites.
- Disseminate information in the local community through signboards detailing the nature and duration of construction works, along with contact numbers for concerns and complaints. Engage the local communities through outreach efforts, inform them of road closures and construction schedules, and conduct awareness raising programs elucidating the nature of work, potential disturbances, and associated risks and sharing traffic plans with them for their safety and security.
- Proactively update traffic management signage well in advance based on planned construction activities, ensuring a proactive approach to communication and responsiveness to evolving circumstances.
- Contractors must verify that drivers possess valid driver's licenses.

7.2.7. Disturbance to Ecosystems (Impacts on Biodiversity)

A. Impacts

Table 28 shows the inventory of trees present in the sub project sites. It is estimated that no trees would be removed/impacted for the rehabilitation works.

Table 28: Tree Inventory of the sub project sites

Name of sub-project	Name of Species		Plant	IUCN	Mature (Girth>24")		Immature (Girth<24")	
	Common	Scientific	Type	Status	Existing	TBC	Existing	TBC
1 Flood Detention Dam At Mazarani Stream	Kandi	Prosopis cineraria	Tree	NA	9	0	7	0
	Sindhi babur	Acacia nilotica	Tree	LC	7	0	8	0
Sub Total					16	0	15	0
Total Number of Existing Trees					31			
Total Number Trees To-Be-Cut (TBC)					0			

B. Mitigation Measures

- Contractor will prepare the tree inventory before the start of the construction works. This may involve: Identifying tree species, measuring tree diameter at breast height (DBH), Recording tree height, Assessing tree health and condition &, and Mapping GPS coordinates of tree locations. Following the completion of the inventory, the contractor will generate the report. Subsequently, the Construction Supervision Consultant (CSC) will validate the report and submit it to the Project Implementation Unit (PIU). Communications regarding the report will be managed by the contractor through the CSC, involving stakeholders such as the Forest Department, CSC, and PIU. On the basis of the inventory, the contractor will develop and submit a Tree Cutting and Plantation Plan to PIU for approval.
- The use of local vegetation as fuel by labor will be prohibited at the campsite.
- No hunting, harassment, or netting of wildlife will be permitted. Major project activities will be completed before the arrival of migratory birds on wetlands and other sensitive areas. No clearing of bushes will be allowed during the nesting/breeding season of birds. Maximum effort will be made to save rodent colonies during construction.
- The camps will be properly fenced and gated to check the entry of wild animals in search of eatable goods. Similarly, wastes from the camps will be properly disposed of to prevent them from being eaten by wild animals. Staff working on the project should be given clear orders, not to shoot, snare or trap any bird.

7.2.8. Dam Breach Study

A spillway has been provided as the first line of defence to ensure the safety of the proposed Detention Dam. The spillway has been designed to safely discharge excess floods up to the 100-yr flood with a freeboard of 5 ft. The freeboard has been set considering the reservoir fetch length and corresponding wave height.

The study of dam break was conducted as a part of the detailed design. It has been concluded from the dam break study, the reservoir area of flood detention dam is small and not exceeding 248 acres. Thus, the area inundated in a dam breach scenario is 6.16 sq. mile or 15.95 sq. km.. An emergency preparedness plan will be prepared before completion of civil work of dam. The summary of dam break study is provided in **Table 29**.

Table 29: Summary of Dam Break Study

S.No.	Parameters	Mazarani Dam
1	Flood Volumes	
1.1	Reservoir Volume at Normal Reservoir Level (Acre-ft)	86,345
1.2	Design (100-year) Flood Hydrograph Volume (Acre-ft)	107,550
1.3	Combined volume: Dam Breach+100-year Flood (Acre-ft)	193,895
2	Discharge Peaks	
2.1	100 Year Flood Peak (cfs)	34,857.78
2.2	Dam breach + 100-year Flood (cfs)	37,479.67
3	Inundated Area (Sq. Miles)	
3.1	Combined: Dam Breach + 100 year Flood	6.16

7.3. Social Impacts and Mitigations of Sub-Project Activities

7.3.1. Labor Influx

A. Impacts

Some adverse social impacts could arise due to labor influx. The influx of migrant construction labor also brings strains on local services and healthcare. Moreover, cultural differences and language barriers may lead to social tensions and conflicts within the community.

B. Mitigation Measures

- A large-scale labor influx is not expected due to the availability of local labor supply in the subproject area and the scale of works anticipated under the subproject. Except for a limited number of managers, supervisors and skilled workers, the majority of workers may be sourced locally or from nearby areas within the district. The priority for local labor (dependent on skill, and experience capacity) is expected to minimize the risk of labor influx, where there is a requirement for special skills.
- As part of the mitigation process, the camps will be located at least 500 meters away from local communities to avoid social conflict as well as to avoid any possible adverse impacts. Fencing will be provided around the campsite and the Contractor will be providing security. The contractor will develop a suitable Camp Layout Plan and

Workers' Code of Conduct' and get approval from PIU before its implementation at construction site.

7.3.2. Forced Labor and Child Labor

A. Impacts

There will be a LOW risk of Violence against Child (VAC) & child labor at the sub-project active construction site. However, following mitigation measures will be adapted to control over this risk.

B. Mitigation Measures

- The contractor will ensure that workers at site with minimum 18 years of age and have their valid Computerized National Identity Cards (CNIC).
- The contractor will ensure there will be no forced labor at sub-project construction sites.
- The contractor shall conduct trainings and awareness-raising sessions, regularly in the communities to sensitize on prohibition and the negative impacts of child and forced Labor.

7.3.3. GBV and SEA/SH

A. Impacts

Although the influx of workers will be minimal as discussed earlier, new workers (outside of their social spheres) may form close social relationships with local communities. This can lead to unacceptable and/or illegal behavior, ranging from unwanted aggressive advances, SEA/SH against women and children. There could be the risk of gender base violence from migrant labors, which often remains away from home on sites. This may lead to inappropriate behavior including sexual harassment of women, girls and boys in the local community. This could specially be relevant in case the nearby population is from any marginalize group. Additionally, the extended absence of migrant workers from their homes at construction sites may contribute to increased instances of gender-based violence, such as sexual harassment, towards women, girls, and boys within the local community.

B. Mitigation Measures

To effectively address gender-based violence (GBV), sexual exploitation and abuse (SEA), and sexual harassment (SH) risks within the project, the following action items will be implemented:

- Schedule training/orientation sessions for supervision consultants, Contractor's staff/workers, and PIU (Project Implementation Unit) personnel to sensitize them on addressing GBV, SEA, and SH risks at the project level.
- Develop a code of conduct for on-job workers that aligns with the objectives of ESS2 (Environmental and Social Standard 2) and adheres to the procedures outlined in the World Bank's Procurement Regulations.

- All on job worker will sign code of conduct to ensure their commitment to maintaining a safe and respectful work environment.
- Implement a zero-tolerance policy for all workers regarding GBV and SEA/SH, clearly communicating the consequences of any violations.
- Establish Grievance Redressal Mechanism (GRM) for reporting and addressing incidents of GBV, SEA, and SH promptly and confidentially, ensuring the safety and well-being of victims and whistleblowers.
- Monitor compliance with the code of conduct and the zero-tolerance policy through regular audits and assessments, taking corrective actions as necessary to uphold standards and prevent future occurrences.
- Provide ongoing training and support to reinforce understanding and awareness of GBV, SEA, and SH issues among project personnel, emphasizing the importance of maintaining a respectful and inclusive workplace culture.
- Additionally, the contractor will be responsible for educating workers on topics including Gender-Based Violence (GBV), Sexual exploitation and abuse / Sexual Harassment (SEA/SH), child abuse, and human trafficking. These measures are intended to mitigate the risk of GBV and promote adherence to the code of conduct.

7.3.4. Communicable Diseases

A. Impacts

The influx of labor could potentially lead to adverse social impacts. Migrant labor poses potential risks to community health, including the transmission of HIV/AIDS and communicable diseases. The community may face risks to health, including the spread of HIV/AIDS, communicable diseases (including Covid-19), and other infections, due to the presence of migrant construction labor. .

B. Mitigation Measures

- The contractor will confine construction activities exclusively to the designated sub-project area.
- The labor camps will be strategically positioned at predetermined sites. The contractor will be obligated to furnish essential facilities in the labor camps, including dormitories equipped with active mobile internet, kitchens, washing and bathing facilities, as well as latrines with septic tanks.
- The contractor will provide suitable arrangements or the regular and comprehensive medical checkup of labors, particularly for communicable diseases, at the project commencement.
- To ensure the well-being and efficient functioning of the labor camps, the contractor will develop and submit plans for workers' code of conduct and camp layout. These plans will undergo approval by the Construction Supervision Consultant (CSC) and PIU before implementation on-site. This approach ensures a structured and organized

environment for the labor force, aligning with established guidelines and regulatory standards

- The training plan should encompass proposals for raising awareness about HIV/AIDS, COVID-19, and the transmission of sexually transmitted diseases. The contractor is responsible for conducting trainings through E&S team in consultation with CSC and PIU. The role and responsibility have been defined in the CESMP Section 13 (Annexure IX). Occupational Health and Safety.

7.3.5. Occupational Health and Safety

A. Impacts

The worker at the subproject construction site will potentially exposed to typical health and safety risks. This includes exposure to the physical hazards of using the construction equipment, working near running traffic, operating equipment, working on and near scaffolding, tripping and falling, exposure to noise and dust, falling objects, traffic hazards associated with the operation of project-related vehicles, exposure to hazardous materials and exposure to electrical hazards related to the use of tools and machines as well as the prevalence of the incidence of respiratory diseases as a result of dust and emissions.

B. Mitigation Measures

The following steps are suggested for the proper management of occupational health and safety within the sub-project area:

- The contractor is responsible for development of specific Labor Management Plan, OH&S Plan and Community H&S Plan according to Sindh Occupational Safety and Health Act 2017 while adhering to the ESS2 – Labor and Working Conditions as well as Labor Management Procedure (LMP) and will submit to the PIU for review and approval. When approved, the contractor will implement the plan during the construction period. This plan will describe all jobs, their risks, and the controls that will reduce risks; these controls may include PPEs, restrictions on activities or locations, and other measures. The plan will also describe the type of training which will be given to the workers. Those who work near water, at heights, and with heavy equipment will need special training so those hazards can be managed and minimized.
- The contractor will provide all the relevant Personal Protective Equipment (PPEs) to the labor on the job, and their use will be ensured during the construction activities. The implementation cost of OH&S plan is reflected in the ESMP cost which will be the part of the bidding document such as procurement of PPE, signages etc.
- The contractor will train his crews on the aspects covered in the above-described Plan.
- The contractor shall fence the working area and unauthorized shall not be allowed to enter the area.
- The contractor will hire an HSE officer with adequate experience to address the above impacts.

- The Contractor will display signboards and banners about traffic diversion at places on detour routes.
- The contractor will provide speed breakers at appropriate places in consultation with/approval of the Engineer, which should be removed after completion of the project.
- The Contractor and E&S team is responsible for maintaining workers' hygienic conditions in labor camps.
- The Contractor shall make available the first aid kit, snake bite kit and bandages always and all the sites. Moreover, paramedic staff will be available on-site and the cost of hiring will be a part of the BOQ item. The location of these kits shall be marked and shall be easy to access by all.
- No private property will be used without the permission of the owner for any project activity.
- During construction phase, it is the responsibility of CLO to maintain liaison with the community and GRM will be established to address complaints related to safety hazards.
- The contractor will also prepare an emergency preparedness and response plan to address events such as urban floods, fires, earthquakes, injury/death, and accidents.

7.3.6. Physical/Community Infrastructure

A. Impacts

Construction works can potentially damage existing infrastructure such as roads, culverts, and electricity lines. Some of this infrastructure may need to be relocated to allow the proposed works to be carried out.

Mitigation Measures

- During the field survey, it was confirmed that no public infrastructures fall within the buffer zone. If in case any unforeseen event happens, all damaged/removed infrastructures will be repaired/ restored to their original or better condition.
- CLO will be responsible to maintain good liaison with the community and a site based GRM will be established to address any related complaints.

7.3.7. Chance Findings of Important Physical and Cultural Resources

A. Impacts

The sites or items of heritage significance could be found during the sub-project development work. The "chance finds" procedure covers the actions to be taken from the discovery of a heritage site or item to its investigation and assessment for siting and designing a project to avoid significant adverse impacts on the cultural heritage. The procedure for chance find of important physical and cultural resource is provided in detail in **Annexure X**.

B. Mitigation Measures



- The contractor will ensure that the “chance finds” object will not be disturbed until an assessment made by competent professionals consistent with the requirements of ESS8 – Cultural Heritage, which sets out measures to protect cultural heritage throughout the lifecycle of the project.
- In the case of a chance find, the site will secure and report immediately to PIU.
- The works will not recommence until approval from the relevant authority. Meanwhile, the contractor will cease their operations and ensure due caution for archaeological remains.

GRIEVANCE REDRESS MECHANISM



8. GRIEVANCE REDRESS MECHANISM (GRM)

8.1. Grievance Redress Mechanism (GRM)

The Grievance Redress Mechanism (GRM) serves as an institutional framework designed to facilitate the expeditious, transparent, and predictable resolution of issues raised by stakeholders pertaining to the project. A grievance, in this context, is formally communicated dissatisfaction regarding actions taken or not taken, the quality of services, works, or policies, as well as deficiencies in the project management and its implementation mechanisms. Throughout the course of project execution, various challenges and constraints may emerge. In the absence of effective avenues for stakeholders to articulate and address their grievances, they may resort to alternative channels, which can be cumbersome and protracted, resulting in project delays. Conversely, persistent neglect or unresolved grievances may contribute to inflexibility, deadlock, and hinder the project's ability to attain its sustainable development goals.

The SFERP GRM will be gender-responsive, culturally appropriate, and readily accessible to the stakeholders at no cost and without retribution. It will enable Project Affected Persons (PAPs), local communities, employees, and other affected stakeholders to raise grievances and provide suggestions vis the sub-project, with the project proponents and contractors, and seek redress when they perceive a negative impact arising from the activities. This mechanism serves as a platform to promptly resolve and address community concerns, reduce risks, and strengthen systems and processes, thereby contributing to positive service delivery. Therefore, the complaints/grievances should be addressed through a well-organized Grievance Redress Mechanism (GRM) covering all activities under the project.

8.2. Objective and Composition of GRM

The primary aim of the Grievance Redress Mechanism (GRM) is to establish and sustain a comprehensive protocol for addressing the environmental and social apprehensions of project stakeholders. This protocol will incorporate a redressal mechanism tailored to the identified risks and adverse impacts of the project, with a specific emphasis on stakeholders. Standard Operating Procedures (SOPs) and informative materials will be meticulously crafted for the SFERP GRM, presented in Urdu, Sindhi, and English, and disseminated to the public at the commencement of project implementation and prior to contractors mobilizing to project sites.

8.2.1. Specific Objectives:

- To furnish efficient communication channels and a structured process for the registration of complaints, ensuring a swift, transparent, and impartial response and resolution without any risk of reprisals for the environmental and socially impacted stakeholders within the sub-project area.
- To demonstrate responsibility towards the local community for their environmental well-being by preventing and mitigating any adverse environmental effects caused by the sub-project activities.

- They provide free and fair access to diverse members of the local community, including more vulnerable groups such as women and youth, keeping the confidentiality and privacy of complainants.

8.3. GRM structure

The Grievance Redressal Mechanism (GRM) within SFERP operates across three tiers, commencing at the site level, followed by the Project Implementation Unit (PIU), and culminating at the Project Steering Committee (PSC). The grievance is initially submitted by the affected individual to the project level Grievance Redressal Mechanism (GRM). Subsequently, it is directed to the relevant level, responsible for addressing and resolving the grievance. These responsible entities maintain records of the grievances resolved. The grievances that are not addressed at Project Level GRM can be filed in the court of law.

The delineation of processes at each level is as follows:

8.3.1. Site-level Grievance Redress Cell (GR Cell)

At the site level, a Grievance Redress Cell will be established to document the concerns and grievances of Project Affected Persons (PAPs). The Contractor's appointed Community Liaison Officer (CLO) will serve as the Focal Person and Convener, tasked with registering grievances and maintaining comprehensive records. Grievance Focal Points (GFPs) will be selected by the community at each sub-project site, comprising individuals, both male and female, readily accessible to the community. Grievances, whether communicated in writing or verbally, can be received by GFPs or the CLO, and the CLO will meticulously record them in the grievance register. The contents of the Grievance Register will be regularly updated by the CLO, who will share the monthly record with the Project Implementation Unit's Grievance Redress Committee (GRC). The resolution of site-level grievances falls under the purview of the contractor and the project manager. In cases where a grievance persists unresolved, the project manager of each sub-project will formally forward it in writing to the GRC. Flowchart for Site Level GRM is illustrated in **Figure 28**.

The responsibilities of GR Cell shall include the following:

1. Review, consider and resolve grievances site level.
2. Conduct fact-finding pertaining to grievances.
3. Resolve grievances within a period of one week.
4. Undertake analysis of data on grievances and use this to make informed decisions.
5. Maintain confidentiality if complainants wish to remain confidential.
6. Maintain an updated GRM database/ Complaints Log;

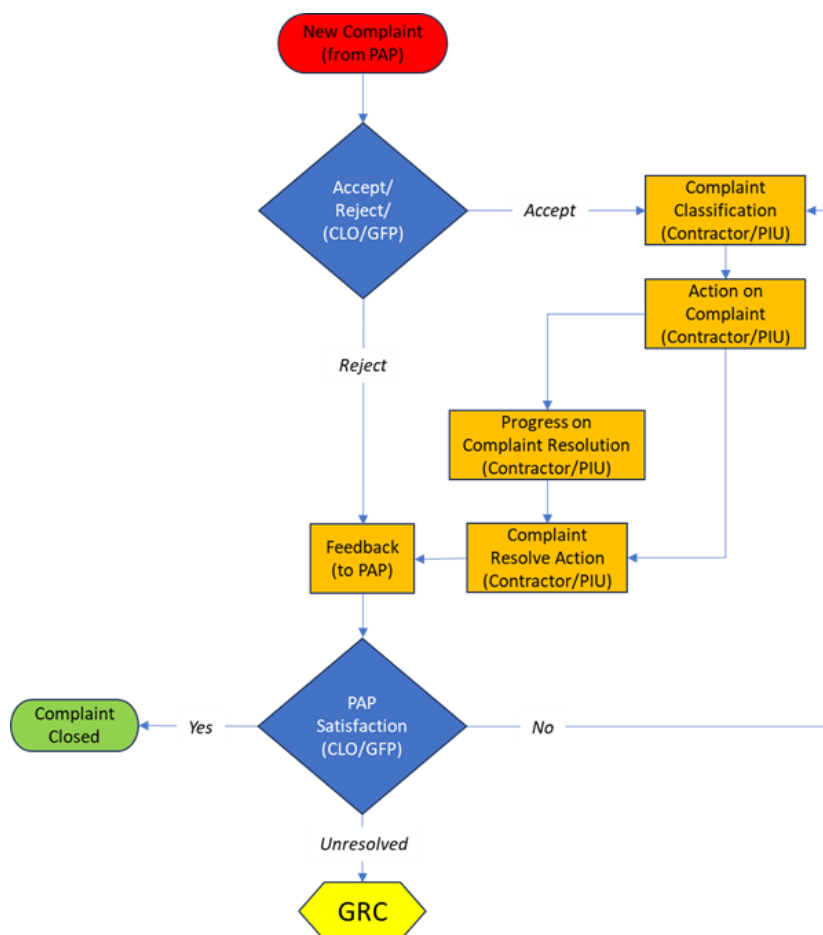


Figure 28: Site Level GRM flowchart

Throughout the complaint investigation, the Grievance Redress Committee (GRC) collaborates with both the Contractor and the Community Stakeholder Committee (CSC). Should mitigation measures be identified during the investigation, it is incumbent upon the Contractor to expeditiously implement these measures. The CSC assumes the responsibility of overseeing and ensuring the diligent execution of these measures by the Contractor.

8.3.1.1. Grievance Focal Points (GFPs)

Grievance Focal Points (GFPs) will be selected from both genders within each community to actively aid and facilitate community members in reporting grievances arising from project activities. Comprehensive training in grievance redress facilitation will be provided to the GFPs by the Project Implementation Unit (PIU) or Community Stakeholder Committee (CSC).

GFPs will be identified by the relevant community in consultation with the Social Safeguard team of PIU (SFERP), CSC and CLO. The GFP would be responsible for making the community aware of the following components:

- Inform people about the GRM and how it works, and their options depending on the types of complaint.
- Types of grievances not acceptable/eligible to the GRM.

- Intake channels at the GRM, e.g., phone numbers, postal and email addresses, and website and information that should be included in a complaint.
- Inform the Complainant of the investigation results and the action taken, and option of appeal to PSC if not satisfied with the outcome.
- Two GFPs (a female and a male) will be selected for each sub-project site.

8.3.2. PIU Level GRM

A Grievance Redress Committee (GRC) has been established at the SFERP PIU office to address grievances raised by affected persons or parties at the PIU level. If a grievance persists unresolved despite diligent efforts within the stipulated 21 days, it will either undergo an additional 21-day review with mutual consent of the Project Director and the complainant or be escalated to the Project Steering Committee (PSC) for resolution, depending on the GRC's evaluation of the most effective resolution strategy.

At the PIU level, there is a Grievance Redress Cell (GRC), which operates as a dedicated body, ensuring the effectiveness and efficiency of the grievance redress process. It comprises an Additional Director, Environmental, Social Safeguard, and Gender Specialists from the PIU-SFERP, a representative from the PIC, and Co-opted members in the sub-project areas. The Focal Person and Convener of the GRC is the Social Safeguards Specialist. All the decisions or findings made by the GRC will be binding on the contractor.

Public notices will be disseminated by the PIU to inform the public about the Grievance Redress Mechanism (GRM) in the sub-project area. The contractor will prominently display signage containing the contact details of the GRC in the Sindhi language. Complainants can register their grievances through email (sferp.sid.gos@gmail.com), phone (021-99332368), and fax (021-99332367) at the GRC based at the PIU.

These phone and fax numbers and email ID will be managed by GRC based at PIU. The Social Safeguard Specialist will be the designated focal person to receive a complaint(s) in writing, through calls, fax and emails. The Social Safeguard Specialist will have resources and facilities to maintain a complaints database which will be digitized and available online, and will communicate with the contractor, Site Engineers, and CSC.

Considering the limited mobility of female community members beyond their villages and residences, it is imperative for the female staff from the Project Implementation Unit (PIU), particularly the Gender Specialist, to undertake visits to local communities for the purpose of documenting grievances. The frequency of these visits will be contingent upon the nature and scale of activities in a given area, as well as the prevalence of grievances.

The responsibilities of the GRC at PIU are:

1. The Social Safeguard & Resettlement Specialist shall be the focal person for GRC, which is responsible for logging the complaint and date of receipt onto the complaint database and informing the CSC and the Contractor.
2. The GRC will coordinate with local government to receive project-related complaints made directly to them;

3. The GRC shall review, consider and resolve grievances related to environmental and social issues during implementation received at the PIU level;
4. The GRC, with the CSC, is responsible for investigating the complaint to determine its validity and assess whether the source of the problem is due to project activities and identifying appropriate corrective measures. If corrective measures are necessary, GRC, through the CSC, will instruct the Contractor to take necessary action;
5. Resolve grievances presented to the GRC within a period of two weeks;
6. Inform the Complainant of the investigation results and the action taken;
7. Undertake analysis of data on grievances and use this to make informed decisions;
8. GRC decisions, if not acceptable to the complainant(s), can be appealed to the PSC;
9. Maintain updated online GRM database/Complaints Log.

This GRC will receive unresolved complaints/grievances from sub-project level GRM for further action to satisfy the PAP. Moreover, this GRC can also receive new complaints/grievances from any PAP.

At the PIU office, an authorized GFP/CLO will receive the complaint/grievance. It will then be registered in a dedicated register of complaints, or the Grievance Management System appropriately. The GFP/CLO at this GRC level will appropriately acknowledge the receipt of an unresolved complaint/grievance from sub-project GRM. In case of a new complaint/grievance, the concerned PAP will be acknowledged about the registration of his/her complaint/grievance.

The registered complaint/grievance shall be submitted to GRC members for review and resolution. The members can take a maximum of 21 days (from the date of complaint/grievance registration) to look into its details. Within this time duration, the GRC members can also perform essentially required physical site visit(s) to collect additional information predominantly for decision-making.

Suppose a grievance remains unresolved at the GRC PIU level despite making best efforts till the stipulated time of 21 days, it will be retained for another 21 days with the prior agreement of the Project Director.

In case the complaint remains unresolved because of the dissatisfaction of the concerned PAP, the complaint will then be forwarded to the Project Steering Committee (PSC) for further action. The PSC will then resolve the complaint/grievance on its behalf. If the PAP is dissatisfied with the decision of the PSC, then he/she can reach out to the court of law.

The mechanism is developed to ensure the access of PAPs to a GRM that openly and transparently deals with the complaints/grievances in consultation with all concerned consistent with the World Bank safeguard requirements. PIU level GRC flowchart is elucidated in **Figure 29**.

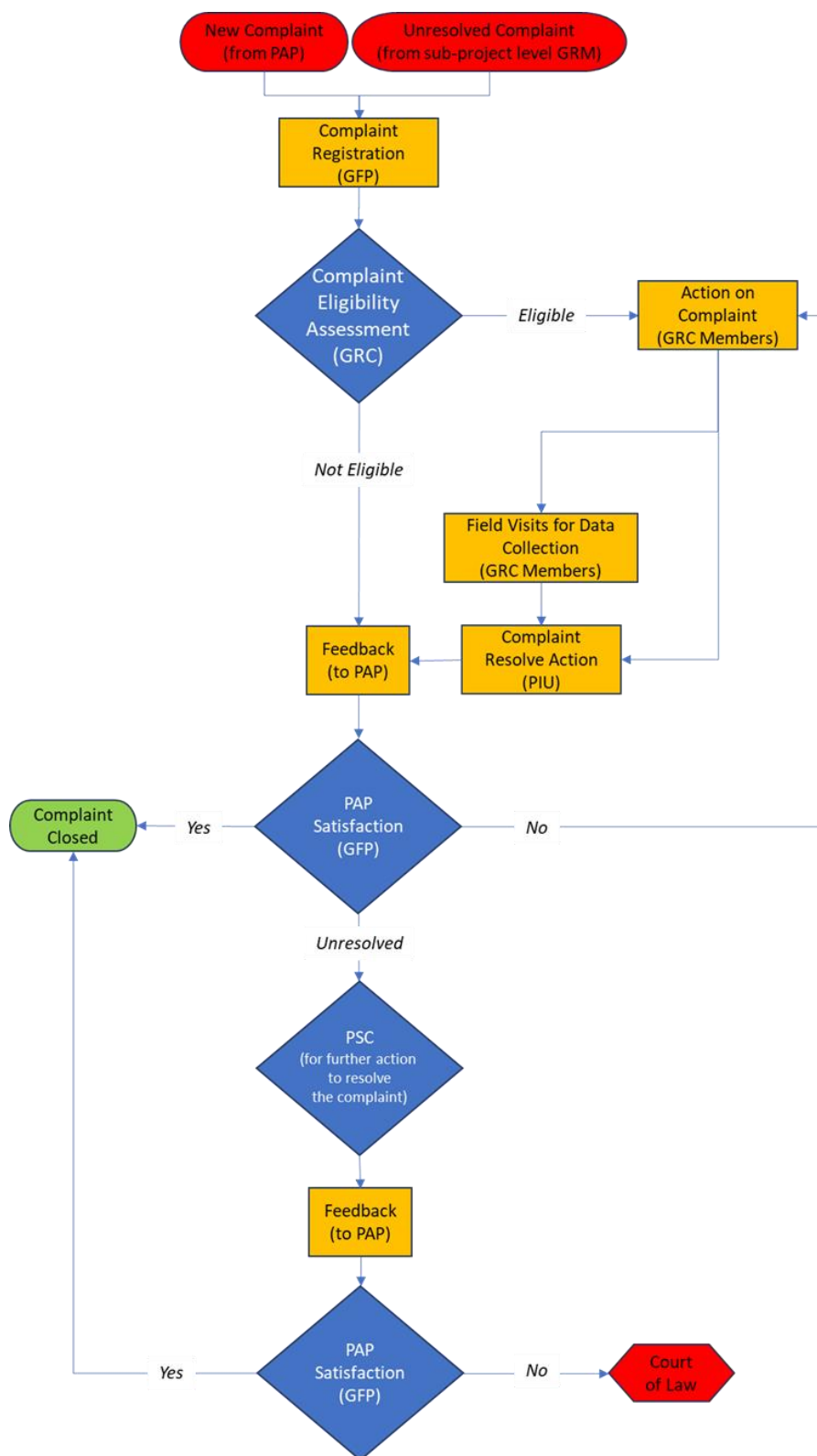


Figure 29: PIU Level GRC Flowchart

8.3.3. Project Steering Committee (PSC) Level GRM

The PSC will meet on a quarterly basis to hear grievance cases during its regular meetings and will be convened for special grievance redressal meetings as needed. PSC members and

the Secretary of Irrigation will address the grievance with a viable resolution. Flow chart at **Figure 30** shows the grievance entry points.

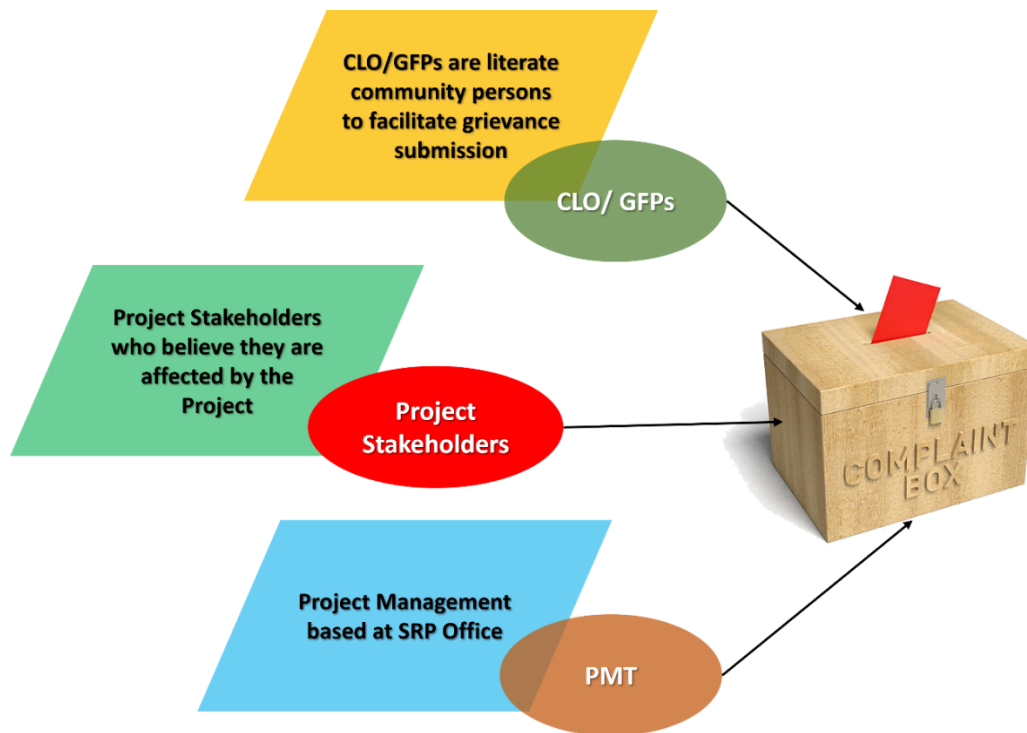


Figure 30: Flow chart of grievance entry points

The GRC composition at different levels is given in **Figure 31**.

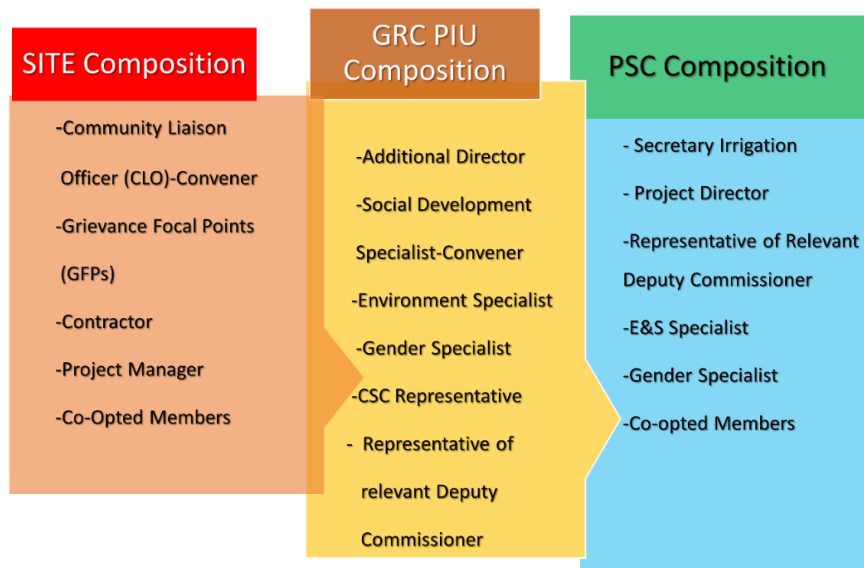


Figure 31: SFERP GRC composition

8.4. GRM for workers

The role of the Community Liaison Officer (CLO) at the site level encompasses serving as the Grievance Focal Point (GFP) specifically for labor or worker complaints. Upon successful

resolution of an issue, no additional follow-up is necessary, and the case will be duly documented and closed. However, if a grievance remains unresolved at the site or contractor level, workers have the option to directly approach the Grievance Redress Committee (GRC) regarding their concern. Each site will prominently display signage featuring the contact details of the GRC in the Sindhi language.

8.5. GRM for GBV and SEA/SH

Grievance Redress Mechanisms (GRM) will integrate mechanisms to track complaints related to GBV and SEA/SH, including a feedback system for regular and timely feedback on actions taken to respond to complaints. These mechanisms will protect the confidentiality of individuals without compromising access to justice.

Grievances related to GBV and SEA/SH will always be escalated to the PIU, and will be dealt with by the PIU designated GBV specialist. GBV/SEA-related complaints will be communicated to World Bank no later than 48 hours after being received by the GR Cell (site level) or by the GRC (PIU level).

The GRC/PIU will assist GBV survivors by referring them to GBV Services Provider(s) for support immediately after receiving a complaint directly from a survivor. A list of GBV service providers will already be available with the GRC before project work commences. In general, the timeframe for resolution of complaints shall not exceed 21 days.

Grievances related to GBV and SEA/SH will be forwarded to the staff specifically trained to handle these types of complaints. The Social Specialist (as GRC Focal Person) and the Gender Specialist at the PIU will receive the necessary training to handle such sensitive cases.

The GRC will develop specific procedures to ensure complainants can register their grievances anonymously, and in a survivor-centered and discreet manner. The GRC will assist GBV survivors by referring them to GBV Services Provider(s) for support immediately after receiving a complaint directly from a survivor.

8.6. Role of Contractor in GRM Complaints Register

The Contractor is mandated to uphold a comprehensive complaint register at the campsite office, systematically documenting all grievances received from local communities. This register will meticulously detail the measures undertaken to address and mitigate these concerns. The conclusive report, signifying the closure of complaints, will be conveyed to the Community Stakeholder Committee (CSC), with the onus falling upon the project manager to furnish the records to the Grievance Redress Committee (GRC) at the Project Implementation Unit (PIU). The PIU, in turn, is responsible for monitoring the implementation of measures aimed at eliminating the recorded complaints.

8.7. Reporting and Monitoring

The Grievance Redress (GR) Cell will document the concerns and grievances of Project Affected Persons (PAPs) at the site level. The Gender Specialist within the Project Implementation Unit (PIU) will assume responsibility for managing complaints related to

Gender-Based Violence (GBV) and Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) at the project/PIU level. To ensure confidentiality, the SFERP PIU will establish specific procedures allowing complainants to register their grievances discreetly.

Any GBV/SEA-related complaints will be promptly communicated to the World Bank within 48 hours of receipt, either by the GR Cell at the site level or by the Grievance Redress Committee (GRC) at the PIU level. The GRC will comprehensively record the complaint, its investigation, and the subsequent actions and outcomes in the monthly Environmental Management and Monitoring reports.

Throughout the construction and initial operational phases covered by loan covenants, the PIU will periodically report progress to the World Bank, incorporating details of complaints and their resolutions. The tracking and documentation of grievance resolutions within the GRC and/or PIU will encompass the following essential elements:

- i. Tracking forms and procedures for gathering information from project personnel and complainant(s);
- ii. Computerized grievance database with dedicated staff to update the database routinely;
- iii. Systems with the capacity to analyze information to recognize grievance patterns, identify any systemic causes of grievances, promote transparency, publicize how complaints are being handled, and periodically evaluate the overall functioning of the mechanism;
- iv. Processes for informing stakeholders about the status of a case; and
- v. Procedures to retrieve data for reporting purposes, including the periodic reports to the PIU and GRC, reports into the monthly ESMP Compliance monitoring report to the World Bank.
- vi. An annual qualitative review of all complaints processed (ensuring filters such as gender, type of complaint, resolution status, time taken, intake channel, district/site, etc.) will also be undertaken to analyze the efficacy of the system.

The GRM will be provided with the budget required for its efficient functioning.

ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN



9. ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

9.1. Objectives

The primary aim of the Environmental and Social Management and Monitoring Plan (ESMP) for rehabilitation endeavors is to ensure the careful adoption of identified measures, thereby safeguarding both the environment and social dynamics. This commitment extends to full compliance with the pertinent environmental and social legislation of the country. Subsequent to the development of the Environmental and Social Management Framework (ESMF), the Project Implementation Unit (PIU) has crafted a meticulously detailed site-specific ESMP, serving as a comprehensive guide for contractors and the executing agency.

9.2. Institutional Arrangements

The execution of this Environmental and Social Management Plan (ESMP) stands as a contractual imperative binding the Contractor and the Project Implementation Unit (PIU) of SFERP. To fulfill this obligation, the Contractor is mandated to enlist dedicated technical staff capable of rigorously executing monitoring activities outlined in the Environmental and Social Management Plan (ESMP).

The Environmental and Social Team within the PIU will spearhead monitoring endeavors during the construction phase, employing comprehensive checklists. Any deviations from the EMP will be promptly communicated to the Contractor. The team will scrutinize progress reports, provide guidance to the client and contractor in cases of identified violations, and maintain meticulous records of events and surveys for future reference.

The overarching responsibility for SFERP projects, inclusive of the Environmental, Social and Gender Team, resides with the PIU under the aegis of the Irrigation Department, Government of Sindh. This body will be led by a Project Director, supported by key positions such as Additional Director-I (Coordination), Additional Director-II (Technical Assistant) and Additional Director-III (Technical Assistant). Additionally, the PIU will receive support in ESMP implementation through the establishment of an Environmental and Social team within the PIU. Specific roles and responsibilities of the institutions involved in ESMP implementation are elucidated in **Figure 32** and further detailed below.

9.2.1. The Project Implementation Unit (PIU)

The overall responsibility for the supervision of the Environmental & Social Management Plan will rest with the PIU under SFERP will act as the apex body of the project to take care of Social/Gender, Ecological and Environmental issues and to take policy decisions at the project level. An Environmental and Social Management team (E&S Team) will be hired within Key positions within the E&S Team including Environment Specialist, Social Safeguard/Environmental Officer and Gender Specialist.

The E & S Team shall be responsible for the supervision of implementing and monitoring the ESMP including GRM. The team shall be answerable to the Project Director (PD) SFERP. The team shall be responsible for the monitoring defined in the ESMP as part of their overall monitoring of social and environmental management. Furthermore, the PIU must ensure that the Suggested Due Diligence measure which has been annexed in **Annexure VII** be included in the contract/s.

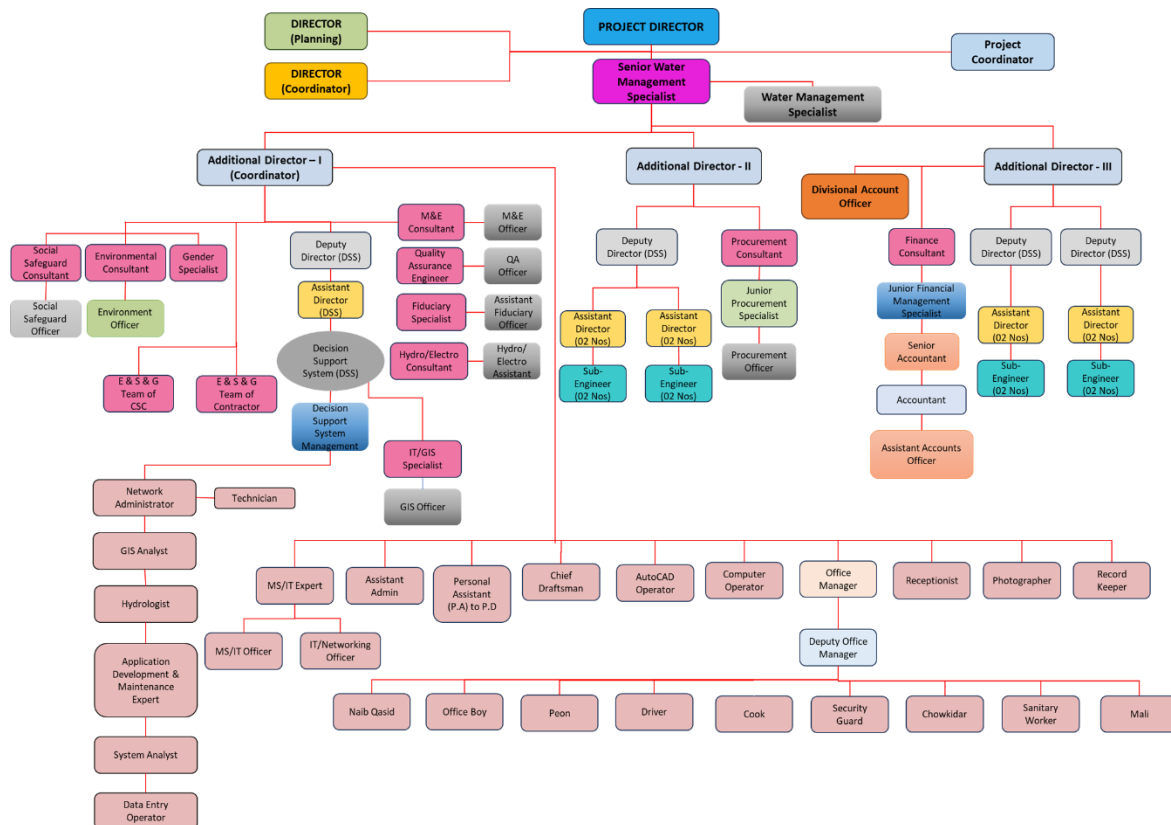


Figure 32: Organizational Chart of Sindh Flood Emergency Rehabilitation Project (SFERP)

9.2.2. The Construction Supervision Consultant (CSC)

The CSC will be engaged by the project proponent, is responsible for the monitoring of the EMP on behalf of the PIU during the execution of the Civil Works for sub-projects under the SFERP, and shall submit periodic reports. In general, the CSC has the following responsibilities regarding the environmental aspects of the project:

- Review the documents prepared by the Contractor regarding E&S implementation.
- Monitor the implementation of EMP regularly during the execution of civil works by the Contractor. The CSC must have the following key positions:
 - a) Environmental Specialist
 - b) Social Safeguard Specialist /Labor Officer
 - c) Gender Specialist

9.2.3. The Contractor

The Contractor bears the onus of on-site execution of the Environmental and Social Management Plan (ESMP), concurrently assuming accountability for environmental protection liabilities in accordance with the Sindh Environmental Protection Act (SEPA), 2014, World Bank Environmental and Social Framework 2018, the Environmental and Social Management Framework (ESMF) of SFERP, Stakeholder Engagement Plan (SEP-SFERP), Labor Management Procedures (LMP) for SFERP, and pertinent national and provincial policies and regulations. Moreover, the contractor is required to complete the employment details as outlined in **Annexure VIII**. The Contractor will also be responsible for training his crews on all aspects and implementation of the ESMP. The bid should include an environmental and social mitigation budget as part of the engineering costs of the respective works. The key positions to be filled within the contractor's staff for implementation of the ESMP includes, Environmental Coordinator/Environmental Officer (s); Gender specialist, Occupational Health and Safety (OHS) Officers; and Community Liaison Officers.

9.3. Contractor's Environmental and Social Management Plan

Contractor's ESMP has been prepared before the Contract award, and therefore, certain mitigations, which are dependent upon the methodology chosen by any Contractor to deliver the project, could not be specified in it. For example, haulage routes are dependent upon the exact campsite locations chosen by the Contractor.

Therefore, it is required that the Contractor shall prepare at least following eight plans as elaborated below under CESMP before mobilization and implement the plans during the construction period. Once approved by the CSC Environment Specialist & PIU, these documents/plans will become part of the CESMP. The sample CESMP has been attached as **(Annexure IX)**

9.3.1. Labor Management Plan

The contractor shall be prepared and get approval from PIU for the LMP which includes Communication and Local Recruitment Plan as well. The LMP Shall draft under the guidelines of Labor Management procedure as well as the Camp layout plan, which has been set for SFERP. These procedures have been developed to manage risks under the SFERP funded by World Bank. The LMP will set out the project's approach consistent with national requirements as well as the objectives of the relevant World Bank's Environmental and Social Standards on Labor and Working Conditions (ESS2).

9.3.2. Contractor's Camp Management Plan

The camp management by the contractor is mandated to furnish comprehensive information pertaining to social amenities, encompassing dormitories, labor washrooms, cooking zones, dining facilities, prayer areas, septic tanks, potable water sources, and other essential amenities.

9.3.3. Pollution (air, land, and water) Control Plan

The Contractor is obligated to furnish intricate particulars regarding the primary pollution control facilities envisioned, along with comprehensive contingency plans in the event of any failure in these facilities. Adherence to ESS3 – Resource Efficiency and Pollution Prevention and Management is imperative for the formulation of this plan before the initiation of civil work.

This comprehensive plan shall encompass specifics on the designated and licensed disposal facility, oil treatment facilities, and hazardous waste disposal sites earmarked for waste disposal. Additionally, the plan will incorporate a meticulous Environmental Effects Monitoring program.

9.3.4. Waste Management Plan

The Contractor is mandated to incorporate meticulous procedures for the collection and disposal of wastes within their operations. The Waste Management Plan (WMP) should intricately address each waste stream independently, extending its application to construction waste. Formulated and executed by the Contractor, the WMP is designed based on the mitigation plans articulated in the report.

This comprehensive plan encompasses the camp layout, elucidating specifics on various facilities, including procurement, storage, and disposal. An integral component of this plan is the Excavated Material Disposal Plan.

Furthermore, the Contractor is required to distinctly identify control measures to safeguard against any environmental or health ramifications stemming from the handling of hazardous materials, ensuring their safe collection and disposal.

9.3.5. Traffic Management Plan

The basis of the Contractor's Traffic Management Plan and further information is to be provided. The Contractor is required to provide further details once camp/worksite locations and material sources are finalized. The Traffic Management Plan must include details of the proposed access routes to the project area as well as haulage and access routes throughout the project area (including access to and from borrow pits).

9.3.6. Occupational Health and Safety

Upon commencement of mobilization, the Contractor is obligated to formulate a comprehensive Occupational Health and Safety Plan in strict accordance with ESS4 – Community Health and Safety, and the Sindh Occupational Safety and Health Act of 2017, aligning it with the chosen project methodology. This meticulously detailed plan shall encompass the following elements:

- Health and safety management structure, responsibilities, supervision and reporting scheme
- Health and safety goals for the project
- Identification of potential hazards (health risks, safety risks)

- Proposed measures to reduce the risk of identified hazards
- Arrangements to implement such measures
- A system for reporting and investigating accidents, incidents and near misses
- A plan for emergency transfer of staff or public from the site to medical facilities
- Fire and emergency procedures & Site security.

9.3.7. Environmental and Social Awareness Training Plan

This section includes details of the Contractor's environmental and social awareness training program proposed for the workforce. Details are given in **Table 30** given below.

Table 30: Environmental and Social Awareness Training Plan

Areas of Training	Key Aspects to be Covered	Target Group	Frequency
Environment, Social Safeguards	a. Environmental and social awareness on ESS; b. Key environmental and social issues associated with the project and subprojects ESMP and findings; c. Subproject monitoring and reporting. d. Occupational Health and Safety Issues associated with Construction. e. Grievance Redress Mechanism implementation f. Gender-Based Violence (GBV)/SEA/SH g. Child Labor h. Communicable Diseases Management and Monitoring j. Water conservation and optimal resource use, Awareness regarding open defecation and better WASH practices for relevant community k. Identifications, conservation and precautionary measures of wildlife. l. Remote Environmental Monitoring of sites through GEMS software.	PIU, Contractor staff as well as relevant communities.	Before project/ physical works commencement, during construction and after construction.

9.3.8. Emergency Preparedness & Response Plan

The contractor will prepare an EPRP to address emergencies/events such as Dam Break scenarios, fire, floods, earthquakes, accidents, and death/injury. The Plan will include the following details:

- Contacting the relevant agency (e.g., Fire Brigade)
- Procedure for the shutdown of the site;
- Indicators on-site that shall prompt the shutdown of areas of work (linked to natural events)
- Emergency evacuation procedure of staff and members of the public within range of likely impact.

9.4. Compliance and Effects Monitoring

The construction staff will be trained for the implementation of the ESMP and safety measures. Periodic progress reports will be submitted to the Environmental and Social Specialists of PIU. Progress Reports will include the various issues related to the HSE, including but not limited to the following:

- OHS Measures adopted (as OHS statistics)
- Fuel and hazardous material consumption
- Workforce statistics (employment/deployment etc.)
- Compliance monitoring to check whether the actions proposed in the ESMP are being carried out.
- Effects monitoring to record the impacts of mitigation measures.

The oversight of effects monitoring falls under the purview of the (CSC). Box 1 provides illustrative examples of parameters for compliance and effects monitoring. Both methodologies will be executed employing monitoring parameters, encompassing visual observation, photographic documentation, and measurements when deemed necessary. A meticulous record of events and surveys will be diligently upheld.

9.5. Environmental Non-compliances and Corrective Measures

The Contractor will be promptly apprised by the CSC in case of any deviations from the Environmental and Social Management Plan (ESMP), along with the requisite corrective measures. The ensuing steps outlined below, varying in severity, are designed to address environmental concerns, with the overarching principle being to resolve issues at the earliest stages whenever feasible.

Step 1. PIU and Contractor to work out mitigations together and record the facts and the decision implemented.

Step 2. A more serious infringement will be observed and PIU will be notified the Contractor of the issues in writing, with a deadline by which the problem must be rectified. All costs will be borne by the Contractor.

Step 3. The suspension will be enforced until the offending parties, procedure, or equipment is corrected and/or remedial measures put in place if required. No extension of time will be granted for such delays and all costs will be borne by the Contractor.

Step 4. Breach of contract - One of the possible consequences of this is the removal of a Contractor and/or equipment and/or the termination of the contract. Such measures will not replace any legal proceedings that PIU may institute against the Contractor.

BOX-1

(i) Compliance Monitoring:

- Frequency of anti-dust water sprays during construction period;
- Installation of signage regarding community health and safety
- Safety at workplaces and working hours during construction;
- Incidence of liquid/solid waste in the vicinity of work camps (type and amount of waste, amount, interference with local residents, fauna, flora and crops);
- Arrangements made at construction sites for protection of floral and faunal resources
- Assurance of installation of signage regarding community health and safety

(ii) Environmental Effects Monitoring

- Ambient air quality (Particulate matter) during construction phase;
- Surface water quality during construction phase especially at diversion sites
- Ground water quality at camp sites;
- Ground water table at construction sites;
- Number of patients suffering from malaria, cholera, diarrhea, respiratory ailments during construction phase
- Noise levels (in dBA), monitored at fixed locations and planned schedule during construction
- Extent and degree of functionality of diversion channels to ensure un-interrupted water supply;

(iii) Social Effects Monitoring

- Number of local people recruited on project works.
- Incidence of child labor and disproportionate wages

9.6. Communication Reporting and Documentation

The E&S team of PIU and the Contractor will meet before the commencement of the project for setting out the format for the regular meetings for effective communication reporting and regular documentation.

The Contractor and CSC/PIU will be required to produce monthly, quarterly and work completion reports which must include following information:

- Clear information regarding the planned activities (Commitments during the planned progress period)
- How much work is completed in term of total commitment?
- Current work in progress
- Identification of issues and problems that have occurred (if any)
- Provide the general project proceeding of the sub-projects based on social and environmental issues.

The distribution of the reports shall be to PIU and the World Bank.

The contractor, CSC will take photographs at key locations using a digital camera of the subproject area in a walkthrough survey and shall keep a photographic record of the project area. The following data shall be recorded for each photograph:

- Shot (Picture/Photograph) number.
- All the photographs will be referenced with GPS Coordinates
- Title of photograph
- Date and Time, and
- Photographic features.

The photographic record shall be incorporated into the monthly reports.

Complaints Register. The Contractor is obligated to uphold a comprehensive complaint register at both the campsite and workplaces, meticulously documenting all grievances received from local communities. This register will not only chronicle the reported concerns but also detail the measures implemented to mitigate them. The conclusive report will be communicated to the Environmental and Social (E&S) team of the Project Implementation Unit (PIU).

All community complaints and issues will be inclusively reported in the monthly progress report of the subsequent month, accompanied by the status update on complaints from the preceding month. This comprehensive report will undergo scrutiny by the E&S team of the PIU.

Furthermore, contact details for all relevant tiers within the Grievance Redress Mechanism (GRM) will be conspicuously displayed in Sindhi and Urdu at all project sites. These details will also be disseminated during community training and meetings, ensuring widespread accessibility.

Change Record Register. A review of this ESMP will be triggered in two scenarios:

- A change to the designs deviates from the parameters that are safeguarded in this ESMP.



- A discovery in the baseline socio-environmental conditions, which is not recognized or covered by this ESMP.

In the event of either scenario, the EMP shall be updated and reissued accordingly. The Contractor and PIU to document any change in the project design/operation shall maintain the design change record.



9.7. ESMP Matrix

The ESMP matrix containing environmental impact and mitigation measures along with responsibility, monitoring frequency and key performance indicators at design, construction and operation phase are elucidated in **Table 31**.

Table 31: Environmental and Social Management Matrix

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
A. DESIGN PHASE									
A.1. Design / pre-construction considerations									
A.1.1	pre-construction considerations	A.1.1.1	Waste Material (Solid Waste) generated during civil works to cater slope instability	Waste Management Plan to include a sitting and detailed assessment of the suitability of the proposed excavated materials disposal site	PIU	SFERP	All excavated surplus materials are to be disposed of in designated sites.	Once at the end of the design stage	SFERP Office
		A.1.1.2	Compliance to ESMP	Consideration of EMP in preparation for the detailed design and bid documents.	PIU	SFERP	Added ESMP in contract documents	Before the tendering	SFERP Office
		A.1.1.3	Geology and seismology (the erosion of earth material and seismic activity (earthquake) can potentially damage the newly constructed structure.)	Stone pitching on degraded reaches and slopes safeguards against erosion and seismic events.	PIU	SFERP	Emergency Preparedness & Response Plan in place before the commencement of construction.	Once at the end of the design stage	SFERP Office
A.1.2	GRM	A.1.2.1	GBV, safety/health measures for the local population, etc.	The Grievance Focal Points (GFPs) in GRM will be provided training by the PIU/CSC in facilitating grievance redress. The GFP will be selected by the Social Safeguard team of PIU (SFERP), CSC and CLO consultation with the	PIU & CSC	SFERP	Ensure that all workers have signed the code of conduct. Any complaint from the community.	All activities on daily basis except public consultation will be carried out every month	SFERP Office & sub-project sites under the Construction of Flood Detention Dam at Mazarani Stream in



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				community to address GBV, safety/health measures for local population, etc. related issues.					Qambar Shahdadkot District
B. CONSTRUCTION PHASE									
B.1. Site Preparation and Clearance									
B.1.1	Site preparation	B.1.1.1	Top Soil Erosion	The Contractor will prepare the Earthworks Checklist and get approval from CSC. This Checklist must define the limits to the excavation during reconditioning works along with the Work Instructions for topsoil management. The soil required for earth filling should be collected from the nearby government approved quarries/borrow pits. In case soil for earthfill needs to be taken from any private land; approval from PIU will be required. Additionally, the contractor must have a consultation with the land owner and must sign an compensation agreement with the land owner keeping in view the current market rates prior to the civil works	CC	PIU & CSC	Approved Earthworks Checklist, or The Compensation Agreement in case of soil from private land.	During the Planning phase, in parallel with the preparation of bid documents	Location of borrow pits and quarries will be included when the construction phase starts.
				Vegetation clearance shall be limited to the area required for work.	CC	PIU & CSC	Written approval for cutting marked trees before cutting	Weekly	Same as above



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				use of existing accessing tracks	CC	PIU & CSC	No tree-cutting on temporary haul routes	Weekly	Same as above
B.1.2	Disposal of Excavated Material	B.1.2.1	Identification of re-use of excavated material on site, to reduce off-site effects	All excavated materials are to be disposed of in designated sites as per the approved "aste Management Plan". The Plan shall deal with each waste stream separately	CC	PIU & CSC	Comply with approved WMP as per SEPA & WB guidelines	Monthly	Same as above
		B.1.2.2	Community Disturbance	Community liaison will be maintained during the construction stage and GRM will be established to address complaints.	CC	PIU & CSC		Monthly	Same as above
			Noise	Limiting working hours to between 9 am and 5 pm, six days a week. The campsite/s shall be situated at least 500m from any settlement. Additional noise monitoring can be carried out in case of any complaint or request from the affected communities. Additional mitigation measures will be identified and implemented in case the noise levels exceed the permissible limits of SEQS. Community liaison will be maintained to ensure that complaints and grievances are addressed as soon as possible.	CC	PIU & CSC		Monthly	Same as above



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
		B.1.2.3	Damage to existing infrastructure. Need to relocate infrastructure such as electricity transmission lines	Currently, no public infrastructure is observed which creates hindrances in the execution of the work. All damaged/removed infrastructures will be repaired/ restored to their original or better condition. Community liaison to be maintained.	CC	PIU & CSC		Monthly	Sub-project sites under Construction of Flood Detention Dam at Mazarani Stream in Qambar Shahdadkot District
B.2. Construction and Labor Camps									
B.2.1	Locating Camp	B.2.1.1	Community disturbance	Locate the camp at least 500m away from the communities. Community consultations will be carried out and liaison will be maintained. GRM to be established to address related complaints.	CC	PIU & CSC	Review of Camp layout plan	Monthly	Campsites of sub-project sites under Construction of Flood Detention Dam at Mazarani Stream in Qambar Shahdadkot District
			Loss of flora and fauna	Submit layout plans for the camp for the approval of the Engineer before the construction of the camp	CC	PIU & CSC	Construction of campsite: Do not begin before approval of the layout plan.	Once before camp establishment.	Same as above
			Surface water pollution	Locate camps away from the waterbody, etc.	CC	PIU & CSC			
B.2.2	Supply of Drinking Water	B.2.2.1	Depletion of local drinking water resources	The contractor shall make his arrangements for the supply of water ensuring water supply and availability to local communities is unaffected.	CC	PIU & CSC	The contractor will not be entitled to use public water resources	Monthly	sub-project sites under Construction of Flood Detention Dam at Mazarani Stream in



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
									Qambar Shahdadkot District / Near the community water resources of Flood Detention Dam at Mazarani Stream in Qambar Shahdadkot District
		B.2.2.2	Spread of the disease through the unsuitable water supply	Provision of safe drinking water and monthly testing according to the SEQS-16	CC	PIU & CSC	Comply with SEQS	Monthly	Same as above
B.2.3	Water contaminations (Ground water)	B.2.3.1	Construction of an impermeable layer at the washing and bathing area of the construction camp	Suitable latrines (septic tanks etc.) and washing facilities are provided in the camps	CC	PIU & CSC	Latrines are provided at each camp	Weekly	Construction Camp
				Lined washing facilities including a shower, are available near each latrine, including clean running water, soap and drying facilities.	CC	PIU & CSC	Suitable washing facilities are provided at each camp	Weekly	Same as above
	Diversion of Water channels/water course	B.2.3.2	Inadequate diversion of water supply to agricultural land of communities living nearby, which may create a social issue.	Schedules for construction activities along the water body have to be prepared with the consultation of the local community and active GRC needs to operate all the time	CC	PIU & CSC	Availability of water/ no complaint regarding water availability	Monthly	sub-project sites under Construction of Flood Detention Dam at Mazarani Stream in Qambar Shahdadkot District



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
B.2.4	Accidents and Emergencies	B.2.4.1	Emergency Response	The contractor shall prepare a shutdown procedure and evacuation plan	CC	PIU & CSC	Approved EPRP Plan:	Once after the completion of the proposed reconditioning work.	Sub-project sites under Construction of Flood Detention Dam at Mazarani Stream in Qambar Shahdadkot District
				EPRP to man-made and natural disasters (including rains, floods, fire, etc.)	CC	PIU & CSC	Monthly evacuation drill	Monthly	Same as above
				Emergency access routes shall be signed and maintained	CC	PIU & CSC	Emergency access routes are clear and signed	Monthly	Same as above
				Fire extinguishers are to be provided throughout the camp	CC	PIU & CSC	5-15 Fire extinguishers will be provided	Monthly	Same as above
B.2.5	Security	B.2.5.1	Conflict with local communities, attack on staff	Security for avoiding any conflict with local communities. A communication strategy will be developed by the contractor. under the guidance of CSC and get approval from PIU before the start of civil work.	CC	PIU & CSC	Fencing and security. The entrance to the camp shall be monitored and restricted	Monthly	Same as above
				Preparation and Implementation of communication strategy	CC	PIU & CSC	Approval of Communication Strategy by PIU	Once before the start of civil work	All active work sites
				The contractor shall provide all staff with Identity Cards showing their association with the project	CC	PIU & CSC		Monthly	



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				Sindhi-speaking staff Preferably the supervisors to be available at all active work sites to communicate with the local community	CC	PIU & CSC	Sindhi staff available at all active work sites	Monthly	Same as above
				The Contractor shall include in the emergency preparedness and response, a procedure for emergency evacuation of camp and practice this procedure	CC	PIU & CSC	Plan submitted and approved	Once before the start of civil work	Camp area
B.2.6	Restoration	B.2.6.1	Change in Landscape after the closure of works	All temporary facilities shall be removed by the Contractor after the completion of the works	CC	PIU & CSC	Before and after Pictorial evidence.	Once at the time of completion of the subproject	Same as above
B.3. Storage of Material									
B.3.1	Stockpile of Storage Materials	B.3.1.1	Increase in particulate matter	Proper covered storage. Water sprinkling of any uncovered stockpile where dust is generated	CC	PIU & CSC	No dust generated from stockpiles	Monthly	Stockpiles
B.3.2	Storage of Hazardous Materials	B.3.2.1	Health and safety due to improper use of hazardous material	Fuel tanks and other hazardous material storage containers will be properly marked to highlight their contents.	CC	PIU & CSC	Comply with the approved Plan WMP for Handling of Hazardous Materials	Monthly	Hazardous material storage areas
				Hazardous areas to be secure and access limited to trained personnel only	CC	PIU & CSC	Untrained personnel are not accessing hazardous storage areas	Monthly	Hazardous material storage areas
				Provide fire extinguishers	CC	PIU & CSC	Fire extinguishers are provided	Monthly	
				Provide and enforce the use of PPEs as per the Contractor's Health and Safety Plan	CC	PIU & CSC	Proper implementation of PPEs	Monthly	



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
		B.3.2.3	Health and Safety and Pollution	A designated area for oil-storage would be built at the camp	CC	PIU & CSC	Stockpiles only in storage areas identified in the camp layout plan	Monthly	Sub-project sites under Construction of Flood Detention Dam at Mazarani Stream in Qambar Shahdadkot District at Hazardous material storage areas at campsite
				Training on handling, use and disposal of hazardous material must be given to all those with access to the hazardous material area	CC	PIU & CSC	Training as per the Contractor's approved training plan	Monthly	Hazardous material storage area
B.4. Waste Management									
B.4.1	Disposal of sanitary wastes using the municipal system (if available)	B.4.1.1	Introduction of Inappropriate Contaminants or Waste Volume to Municipal System	Testing of wastes and submission of results to the Engineer.	CC	PIU & CSC	Test results show waste is within SEQS limit for pre-treatment	Quarterly	Construction camp/s
				Written consent from the operator of the municipal system submitted to the Engineer	CC	PIU & CSC	Consent/ Agreement submitted	Once before the start of civil works	
		B.4.1.2	Use of municipal system which falls below SEQS standards	All waste should be disposed off through SEPA certified vendor (They should be compliance and have expertise in handling and disposing of the waste)	CC	PIU & CSC	Agreement with the certified waste collectors	Once before the start of civil works	



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
		B.4.1.3	For sewage treatment at the Contractor camps, septic tanks and soaking pits will be constructed if no municipal system is available,	The soak pit will be built in absorbent soil and will be located 500m away from the water well. Both the Septic tank and soak pit shall be covered properly to avoid any obnoxious smell in the surrounding areas.	CC	PIU & CSC	Soak pit built at 500m away from water well and other water sources. Septic Tanks and soak pit are properly covered.	Once before the start of civil works	
B.4.2	Collection of domestic wastes	B.4.2.1	Surface and groundwater pollution	Provide garbage bins within all camps for domestic wastes	CC	PIU & CSC	Provision of bins	Monthly	
B.4.3	Disposal of domestic wastes using Municipal facilities.	B.4.3.1	Ground and groundwater pollution, the spread of disease	Domestic waste shall be collected from waste bins on alternate days and transported by tractor trolley to dispose of in a nearby Municipal facility. A written agreement shall be made between the Municipal operator and contractor for the disposal of domestic waste.	CC	PIU & CSC	receipt regarding waste disposal to TMA	Monthly	Waste dumping sites or designated sites
B.4.4	Disposal of medical wastes	B.4.4.1	Surface water pollution, health and safety of staff and public.	Medical wastes will be stored on-site. The contractor will engage a third-party contractor for the treatment and ultimate disposal of medical waste in a controlled manner.	CC	PIU & CSC	No medical waste in the municipal facility. Waste receiving receipt.	Monthly	Collection points/waste bin at the first aid center
B.4.6	Closure of works	B.4.6.1	Ground, groundwater and surface water pollution, health and safety.	All solid wastes shall be removed from the project area on completion of works	CC	PIU & CSC	All solid wastes disposed of or removed from the site and comply with the restoration plan	After the completion of civil work	sub-project sites under Construction of Flood Detention Dam at Mazarani Stream in Qambar



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
									Shahdadkot District
B.5. Construction Plant and Vehicles									
B.5.1	Movement/ operation of vehicles on site	B.5.1.1	Air pollution	All vehicles should be serviced regularly to ensure no visible black smoke as per manufacturers' requirements	CC	PIU & CSC	Black smoke was not observed emitting from Vehicles/plant	Quarterly	sub-project sites under Construction of Flood Detention Dam at Mazarani Stream in Qambar Shahdadkot District
		B.5.1.2	Generation of dust	The access road is to be adequately compacted or regularly sprinkled to prevent dust generation during use	CC	PIU & CSC	Dust not reaching the settlements in the project area		Settlement near the Sub-project area
			Soil and Groundwater pollution	Vehicles/plants will be checked daily for fuel oils and leaks and fixed as required	CC	PIU & CSC	No fuel oil leaks will be observed from the plant/vehicle		Sub-project sites under Construction of Flood Detention Dam at Mazarani Stream in Qambar Shahdadkot District
		B.5.1.3	Safety of the community, other road users, fauna and staff	Vehicle speed is limited to 10km/hr.	CC	PIU & CSC	Submittal and approval of the traffic management plan	Once before the start of civil work	Same as above



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				Safe driving practices included in Contractor's training plan	CC	PIU & CSC	Training of the drivers as per the approved plan	Monthly	Sub-project sites under Construction of Flood Detention Dam at Mazarani Stream in Qambar Shahdadkot District
				Flag persons to be provided where cross/meet the village road	CC	PIU & CSC	Flag provided persons	Monthly	The Settlement near the sub-project area
				The contractor's Community Liaison Officer collaborates with communities to identify Socially sensitive areas and inform communities before the movement of large plant	CC	PIU & CSC	No complaints were received from the communities	Monthly	Settlement near the sub-project area
				Vehicles with restricted rear visibility to be fitted with an audible backup alarm or provided with a helper (back men) to guide the driver if the vehicle has move backwards.	CC	PIU & CSC	Back-up alarms fitted with the vehicles and operational. or a helper (back man) provided with each vehicle in operation.	Monthly	sub-project sites under Construction of Flood Detention Dam at Mazarani Stream in Qambar Shahdadkot District
				Driving in the project area after nightfall is prohibited except on public highways	CC	PIU & CSC	No driving after dark	Monthly	Haul roads and temporary access roads



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
			Damage to public infrastructure	Damage to roads, infrastructure and property was immediately repaired/compensated by the Contractor	CC	PIU & CSC	No damage to roads/infrastructure	Monthly	Public roads
				Use of horns is prohibited near the settlement	CC	PIU & CSC	Nor horns were heard at the settlement	Monthly	Settlement near the sub-project area
			Disturbance of Fauna	monitoring the impacts on fauna	CC	PIU & CSC	Status and behavior of terrestrial and avian fauna	Quarterly	sub-project sites under Construction of Flood Detention Dam at Mazarani Stream in Qambar Shahdadkot District
			Reduction in access to women and girls	Avoid routes used by women and girls as far as possible, if unavoidable, identify alternate routes for women and girls	CC	PIU & CSC	No complaints were received from women and girls	Monthly	
B.5.2	Deliveries to Site	B.5.2.1	Dust	Covered transportation of loose materials	CC	PIU & CSC	No dust generation from delivered materials	Monthly	Approach roads
		B.5.2.3	Community disturbance increase in traffic	Traffic management plan to be submitted to Engineer for approval and to include routes for delivery vehicles	CC	PIU & CSC	Submittal and approval of plan TMP	Once	
				Deliveries should be carried out during normal working hours and prohibited at night if unavoidable then follow the nighttime working protocols.	CC	PIU & CSC	No deliveries were carried out at the night.	Monthly	Construction camp



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				Delivery vehicles are prohibited from queuing on public roads	CC	PIU & CSC	No queuing delivery vehicles on public roads	Monthly	Same as the above
B.5.3	Road/access Closure	B.5.3.1	Community disturbance increase in traffic	Flag persons are to be provided where the cross/meets the village road.	CC	PIU & CSC	Flag persons provided	Weekly	At road partial closure
				The contractor's Community Liaison Officer collaborates with communities to identify the sensitive areas and inform communities before movement.	CC	PIU & CSC	No complaint received	Monthly	Settlement near the sub project area
				Request for road closure must be approved by the relevant authority	CC	PIU & CSC	As per Approved TMP	Once for each closure	Throughout construction period
B.6. Health and Safety of The Workforce									
B.6.1	General construction works	B.6.1.1	Health and safety of provisions	The contractor shall prepare and submit an occupational health and safety plan. This plan will need to describe all jobs, their risks, and the controls that will reduce risks; these controls may include PPE, restrictions on activities or locations, and other measures. Those who work near water, with heavy equipment will need special training so those hazards can be managed. The contractor will ensure the use of Personal Protective Equipment (PPE) for his labors	CC	PIU & CSC	Submittal and approval of Labor Management plan as per the guidelines provided in Labor Management Procedure of SFERP The number of reported accidents. The number of reported near-misses. Non-compliance observed. Community complaints.	Regularly as specified in the monitoring plan	Sub-project sites under Construction of Flood Detention Dam at Mazarani Stream in Qambar Shahdadkot District



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				during the construction period; To overcome the drinking water contamination issue, at each construction camp, the contractor shall install a solar-operated domestic water filter/150GDP with Ultraviolet (UV) to ensure safe and healthy drinking water for the workforce. The Contractor will display sign boards and banners about traffic diversion at places on detour routes; Community liaison will be maintained during the construction stage and GRM will be established to address complaints related to safety hazards.					
		B.6.2.1	Health and safety of Staff	The accidents will be reported in occupational health and safety report. The report will detail actions to be taken to reduce the risk of occurrence	CC	PIU & CSC	Submittal of the accident report	Monthly	Same as above
				A qualified health and safety manager will be appointed by the Contractor	CC	PIU & CSC	Qualified health & safety manager present on-site	Monthly	Same as above
				The contractor shall engage a full-time first-aid on-site Contractor to have the on-call doctor	CC	PIU & CSC	On-site Presence of qualified medical practitioners and first aid facilities	Monthly	First aid center at the camp area



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				Provision of the dispensary for the treatment of staff. Dispensary to be stocked with appropriate medicines for likely incidents, diseases and ailments to have occurred on site. Stock is to be replenished as necessary.	CC	PIU & CSC	Dispensary available on-site and restocked regularly	Monthly	Same as above
B.7 Borrow Area Management									
B.7.1	works along the water body	B.7.1.1	Flooding	Preferably not to work during rainy season. Provide alternative drainage for rainwater if earthworks fill established drainage lines	CC	PIU & CSC	Alternative drainage is provided	Monthly	areas where culverts are rehabilitated
B.7.2	Formation of Borrow Areas	B.7.2.1	Habitat loss	The borrow Area Management Plan has to be prepared before the start of the civil work. Borrow areas shall not be established in the agriculture active land	CC	PIU & CSC	Borrow Area Management Plan. Borrow areas are not established in the agriculture-active lands.	Weekly	Borrow Area
		B.7.2.2	Borrowing from toes of embankments	The material shall not be borrowed from the outer and inner toe of the embankments	CC	PIU & CSC	Material is not borrowed from the toe of the embankments	Weekly	Borrow Area
		B.7.2.3	Borrow areas in environmentally sensitive sites	Borrow areas shall not be established in the wetlands, forest and any other environmental and socially sensitive areas	CC	PIU & CSC	Borrow areas are not established in environmental and socially sensitive sites	Weekly	Same as above
		B.7.2.4	Restoration/rehabilitation of borrowed areas	Restoration of borrowed areas	CC	PIU & CSC	Borrow areas are restored to their original condition if situated on private land	Monthly	Same as above



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				Community liaison to be maintained. GRM to be established to address related complaints.	CC	PIU & CSC	Number of complaints	Regularly	Borrow Area
B.7.3	Access to Borrow Areas	B.7.3.1	Impacts on flora and fauna	available/existing access routes shall be followed	CC	PIU & CSC	existing access routes are followed	Weekly	sub-project sites under Construction of Flood Detention Dam at Mazarani Stream in Qambar Shahdadkot District
		B.7.3.2	Impacts on agriculture land and crops	Access routes in agricultural land shall be avoided	CC	PIU & CSC	Same as above	Weekly	Same as above
		B.7.3.3	if access route in the agricultural land is unavoidable, the owner of the land and crop shall be compensated	Compensation to the affected person shall be paid as per the approved LARF prepared for SFERP	CC	PIU & CSC	The affected person is compensated	Weekly	
B.7.4	Restoration of borrowed areas	B.7.4.1	Loss of habitat and landscape change	Potential for shallow wetland creation shall be maximized by the limited restored depth of borrow area to 0.3m	CC	PIU & CSC	The depth of borrow area is restored.	Monthly	
		B.7.4.2	Loss of topsoil	Spread stockpiled topsoil (where topsoil is unsuitable for the formation of rehabilitation work) over borrow areas	CC	PIU & CSC	Stockpiled topsoil is not spread in borrow areas.	Weekly	
B.8 Archaeology and Cultural Sites									
B.8.1	Construction near religious sites	B.8.1.1	Community disturbance	All works excluded from mosques and Graveyards at the Project Site. (Spiritual Place for local people).	CC	PIU & CSC	Compliance with ESS8 – Cultural Heritage by adopting the chance find procedure. All works excluded	Monthly	Sub-project sites under Construction of Flood Detention Dam at



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
							from the identified locations		Mazarani Stream in Qambar Shahdadkot District
				Works do not block access to sites	CC	PIU & CSC	Access to the sites is not blocked	Daily	Same as above
B.8.2	Discovery of unidentified cultural or religious site	B.8.2.1	Community disturbance	The contractor shall not trespass into the site, shall exclude all works and immediately inform the Site Engineer	CC	PIU & CSC	The engineer is informed of the discovery of unidentified cultural or religious sites immediately.	Monthly	Same as above
				Community liaison to be maintained. GRM to be established to address related complaints.	CC	PIU & CSC	Number of complaints	Weekly	Same as above
B.8.3	Chance find	B.8.3.1		In the case of a chance find, the contractor will secure the site and report immediately to PIU. Works may not recommence until the Engineer approves. Site visits of the Culture Tourism & Antiquities Department, Govt of Sindh will be facilitated. Further works will be carried out on such sites only after obtaining clearance from the Department	CC, CSC	PIU & Culture Tourism & Antiquities Department, Govt of Sindh	Chance find	depends on the chance find	Same as above
B9. Safety/Health Measures for The Local Population									
B 9.1	The local population living within/near the sub-project,	B 9.1.1	Accident risks, particularly for the local population living within/near the subproject especially women, children and	Restriction on movement of machinery on the designated haulage routes for transportation of materials. Public	CC	PIU & CSC	Number of complaints to ensure compliance with ESS4 –	Weekly	Same as above



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
	especially women, children and elderly people		elderly people; Public awareness campaigns through displaying signboards at site and haulage routes; Vulnerability to accidents; Deterioration of health due to dust	awareness campaigns through displaying signboards at the site and haulage routes. Interaction with the community; Setting up speed limits (not more than 10 Km in work areas); Availability of first aid box for locals; Strict enforcement keeping non-working persons, particularly children, away from work sites; Adequate signage to manage traffic at sites, haulage and access roads; Ensure water sprinkling. For Community Female Members: •Awareness should be created among the local community including females about the construction work. •Workers should not be allowed to crowd in the residential communities within the site. •Alternative routes for pedestrians should be provided to avoid mixing women with workers. •Raise awareness among the communities of the potential risks of GBV, SEA, and SH and establish links with response services in the			Community Health and Safety		



Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				nearby communities that can respond to instances of GBV (particularly those related to issues of labor influx). •Contractor should take proper measures to address and resolve issues relating to harassment, intimidation, and exploitation, especially against women. •Measures to prevent GBV, SEA and SH The Contractor must include relevant clauses in the workers' code of conduct.					
C. OPERATION PHASE									
C.1	Animal burrowing	C.1.1	Damage to the structure	Regular inspection of structures against burrowing by animals. (Rodents, porcupines, reptiles, etc.). Removal of the animals from the burrow and filling/ compaction of the pit.	SFERP	Third-party	No incident of damages	Twice in year	sub-project sites under Construction of Flood Detention Dam at Mazarani Stream in Qambar Shahdadkot District
C.2	Care of newly planted trees	C.2.1	Mortality of newly planted saplings	The Contractor shall be responsible for the aftercare of the newly planted trees till the civil works are ongoing, after which trees will be handed over to the client.	SFERP	Third-party	Compliance with SEQS	Twice in year	

The environmental parameters need to be monitored during the execution of the project are shown in **Table 32**.

Table 32: Environmental Monitoring frequency and responsibility

Sr. No.	Parameters	Frequency	Responsibility	
			Implementation	Supervision
1.	Ambient Air Quality Sampling as per SEQS,	Monthly	Contractor	CSC
2.	Drinking-Water Quality Monitoring	Monthly	Contractor	CSC
3.	Soil analysis trace metals such as Cd, Zn, Cu, Cr, Pb and Ni	Quarterly	Contractor	CSC
4.	Ambient Noise Monitoring	Monthly	Contractor	CSC

9.8. Environmental and Social Management Cost

The cost of Rs. 7,365,000/- budget for the implementation of the ESMP has been allocated. Details are given in **Table 33**.

Table 33: Cost of Environmental & Social Management and Monitoring

Construction of Flood Detention Dam at Mazarani Stream					
S.no.	Items	Unit	Quantity	Rate	Amount
1	Training (during construction period)	Nos	163	1000	163,000
2	Generators & Construction Machinery Stack +Noise Monitoring (for 12 months for 66 nos of machinery)	Nos	792	2000	1,584,000
3	Drinking-Water Quality Monitoring, During Construction (per month)	Month	12	12000	144,000
4	Workers Communicable Disease Screening Test (HIV, HB, HC)	Nos	163	3000	489,000
5	Personal Protective Equipment	Set	163	3000	489,000
6	Fire Fighting Equipment purchase and refilling (10 Kg each)	Nos	10	2000	20,000
7	GRM establishment & Running Cost	L. Sum	-	-	60,000
8	Solid Waste Management Cost	Month	12	10000	120,000
9	Ambient Air Monitoring (During Cons) at one construction location	Month	12	20000	240,000
10	Ambient Noise Monitoring (During Cons) at one construction location.	Month	12	500	6,000
11	Environmental officer, CLO and OHS Officer Salaries (100 thousand for each person) three different persons will be deputed on one camp site	Months	12	300,000	3,600,000
12	Plantation/landscaping cost	L. Sum	-	-	150,000
13	CESMP preparation Cost	L. Sum	-	-	300,000
Total					7,365,000

ANNEXURES



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**Annexure I: Letters of confirmation regarding land ownership from the concerned division of Sindh
Irrigation Department**



To,

The Project Director
Sindh Flood Emergency
Rehabilitation Project
(Irrigation Component)
Karachi

NO.DC/KSK/GB-BR-/of 2024/ 3774
OFFICE OF THE DEPUTY COMMISSIONER
KAMBER-SHAHDADKOT @ KAMBER
Kamber Dated. 08/11/2024
"SAY NO TO CORRUPTION"

SUBJECT: CERTIFICATION OF LAND OWNERSHIP FOR CONSTRUCTION OF
FLOOD DETENTION DAM AT MAZARANI NAI.

Reference: Your office letter No. PD/SFERP/ Gen:/ 747 dated: 08-11-2024, on the
subject captioned above.

The requisite report was called from the Assistant Commissioner Taluka
Kamber who vide his letter No. ACK/ 437 dated: 08-11-2024, has enclosed the report of
Mukhtiarkar Taluka Kamber on the subject matter bearing No. SHR/- 1462 dated:
08-11-2024. However, the same copies of reports are sent herewith for taking further
necessary action accordingly.

ADDL: DEPUTY COMMISSIONER
KAMBER-SHAHDADKOT @ KAMBER

Copy to:

1. The Commissioner Larkano Division Larkano.
2. Master file.



Annexure II: Report of Ambient Air Quality, Ambient Noise, Drinking water and Surface water of Mazarani Dam



Analysis Report

Address: Ducom Building No. 81-C,
Zulfiqar Commercial, Street No.5,
DHA Phase VIII, Karachi-Pakistan.
Contact No. 0300-3589884

Lab Report Ref. No.	DUCLR-Maz-08-2024	Invoice No.	DUCLR/Mazarani/08/2024
Sample ID:	Air Quality	Project ID.	Infotech/SFERP/Baseline/D3/Aug/2024
Report to:	M/s Info Tech Solutions	Reporting Date	21/08/2024
Sampling Date:	14/08/2024	Sampling Duration:	Spot Monitoring
Sample Type	Ambient Air Quality	Location	Mazarani
Sample Collected/Submitted by:	Ducom Representative	Coordinates	27°22'30.9"N 67°31'07.8"E

Analytical Test Report of Ambient Air Quality Monitoring

Parameters	Test Methods	Unit	SEQS Limit	Results	Remarks
SO ₂	UV Fluorescence	µg/m ³	80	24.40	Within Limit
NO	Chemiluminescence	µg/m ³	40	25.23	Within Limit
NO ₂	Chemiluminescence	µg/m ³	40	26.22	Within Limit
CO	Gas Filter Correlation	mg/m ³	10	7.11	Within Limit
O ₃	UV Fluorescence	µg/m ³	130	5.49	Within Limit
PM _{2.5}	Gravimetric Sampling	µg/m ³	40	37.44	Within Limit
PM ₁₀	Gravimetric Sampling	µg/m ³	120	54.18	Within Limit
SPM	Gravimetric Sampling	µg/m ³	120	113.14	Within Limit
Lead	Spectrophotometer	µg/m ³	1.5	0.001	Within Limit

Reviewed, Sr. Chemist	Approved Lab. Head



www.ducom.com.pk



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Analysis Report

Address: Ducom Building No. 81-C,
Zulfiqar Commercial, Street No 5,
DHA Phase VIII, Karachi-Pakistan.
Contact No. 0300-3599664

Lab Report Ref. No.	DUCLR-Maz-08-2024	Invoice No.	DUCLR/Mazarani/08/2024
Sample ID:	Noise	Project ID.	Infotech/SFERP/Baseline/D3/Aug/2024
Report to:	M/s Info Tech Solutions	Reporting Date	21/08/2024
Sampling Date:	14/08/2024	Sampling Duration:	Spot Monitoring
Sample Type	Ambient Noise Quality	Location	Mazrani
Sample Collected/Submitted by:	Ducom Representative	Coordinates	27°22'30.9"N 67°31'07.8"E

Analytical Test Report of Ambient Noise Quality Monitoring

Sr. #	Sampling Site Location	Coordinates	Min dB(A)	Max dB(A)	Average dB(A)	SEQS Limit	Remarks
1.	Near Bridge	Lat 24.577809 Long 67.547571	43	57	50	65	Within Limit
2.	Near Bridge	Lat 24.577809 Long 67.547571	55	60	57.5	65	Within Limit
4.	Near Village	Lat 24.577809 Long 67.547571	57	59	58	65	Within Limit
5.	Near Village	Lat 24.577809 Long 67.547571	47	58	52.5	65	Within Limit

Reviewed, Sr. Chemist	Approved Lab. Head



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Analysis Report

Address: Ducom Building No. 81-C,
Zulfiqar Commercial, Street No 5,
DHA Phase VIII, Karachi-Pakistan.
Contact No. 0300-3580064

Lab Report Ref. No.	DUCLR-Maz-08-2024	Invoice No.	DUCLR/Mazarani/08/2024
Sample ID:	Drinking Water Quality	Project ID.	Infotech/SFERP/Baseline/D3/Aug/2024
Report to:	M/s Info Tech Solutions	Reporting Date	21/08/2024
Sampling Date:	14/08/2024	Grab/Composite	Grab
Sample Type	Drinking Water	Location	Mazarani
Sample Collected/Submitted by:	Ducom Representative	Coordinates	27°22'30.9"N 67°31'07.8"E

Analytical Test Report of Drinking Water Quality Monitoring

S.No.	Parameter	Method	Unit	SEQS Limit	Result	Remarks
1.	pH @ 25°C	APIA 4500 H ⁺ B	-	6.5-8.5	7.46	Within Limit
2.	Odour	Organoleptic	-	Acceptable	Acceptable	Within Limit
3.	Color	Pt-Co Method	TCU	15	<5	Within Limit
4.	Taste	Organoleptic	-	Acceptable	Acceptable	Within Limit
5.	Total Hardness	ASTM D-1126	mg/l	500	110	Within Limit
6.	Total Dissolved Solids	APIA 2540 C	mg/l	1000	417	Out of Limit
7.	Turbidity	Nephelometric	NTU	<5	2.46	Within Limit
8.	Chloride	ASTM-D512	mg/l	<250	25	Within Limit
9.	Chlorine, Residual	HACH-8021	mg/l	0.2 - 0.5	0.0	Within Limit
10.	Aluminium	Lovibond-40	mg/l	0.2	0.01	Within Limit
11.	Antimony	ASTM D-3697	mg/l	0.005	0.00	Within Limit
12.	Barium (Ba)	ASTM D-4382	mg/l	0.7	0.00	Within Limit
13.	Boron	Lovibond-85	mg/l	0.3	0.0	Within Limit
14.	Fluoride	HACH-8029	mg/l	1.5	0.6	Within Limit
15.	Nitrate	HACH-8039	mg/l	0.5	0.08	Within Limit
16.	Nitrite	HACH-8507	mg/l	3	0.01	Within Limit
17.	Arsenic	Palintest-Kit	mg/l	<0.05	0.00	Within Limit
18.	Cadmium	Lovibond-87	mg/l	0.01	0.00	Within Limit
19.	Chromium	HACH-8024	mg/l	<0.05	0.00	Within Limit
20.	Copper	Lovibond-149	mg/l	2	0.02	Within Limit
21.	Cyanide	Lovibond-156	mg/l	0.05	0.00	Within Limit
22.	Lead	Lovibond-232	mg/l	<0.05	0.01	Within Limit
23.	Manganese	Lovibond-242	mg/l	0.5	0.0	Within Limit
24.	Mercury	Kit-Method	mg/l	0.001	0.00	Within Limit
25.	Nickel	Lovibond-255	mg/l	<0.02	0.00	Within Limit
26.	Phenols	HACH-8047	mg/l	NGVS	0.0	-
27.	Selenium	APIA 3500 Se	mg/l	0.01	0.0	Within Limit
28.	Zinc	Lovibond-400	mg/l	5	0.05	Within Limit
29.	Total Coliform	APIA 9222 B	cfu	0/100ml	0	Within Limit
30.	E-Coli	APIA 9222 D	cfu	0/100ml	0	Within Limit
31.	Fecal Coliform	APIA 9222 D	cfu	0/100ml	0	Within Limit

Reviewed, Sr. Chemist

Approved Lab. Head

[Signature]





Analysis Report

Address: Ducom Building No. 81-4
Zulfiqar Commercial, Street No 5,
DHA Phase VIII, Karachi-Pakistan
Contact No. 0300-3509004

Lab Report Ref. No.	DUCLR-Maz-08-2024	Invoice No.	DUCLR/Mazrani/08/2024
Sample ID:	Drinking Water Quality	Project ID.	Infotech/SFERP/Baseline/D3/Aug/2024
Report to:	M/s Info Tech Solutions	Reporting Date	21/08/2024
Sampling Date:	14/08/2024	Grab/Composite	Grab
Sample Type	Surface Water	Location	Mazrani
Sample Collected/Submitted by:	Ducom Representative	Coordinates	27°22'30.9"N 67°31'07.8"E

Analytical Test Report of Surface Water Quality Monitoring

S. No.	Parameter	Method	Unit	Result
1.	Temperature 40 °C	*APHA 2550	°C	26.7
2.	pH	EPA 150.3	-	8.21
3.	Total Dissolved Solids (TDS)	EPA 160.1	mg/L	1200
4.	Biology Oxygen Demand (BOD) ₅	EPA 401.5	mg/L	210
5.	Chemical Oxygen Demand (COD)	EPA 410.4	mg/L	670
6.	Total Suspended Solids (TSS)	EPA 160.4	mg/L	50
7.	Oil & Grease	EPA 1664	mg/L	00
8.	Sulphide	HACH-8131	mg/L	04
9.	Cadmium	AAS	mg/L	0.06
10.	Copper	AAS	mg/L	0.04
11.	Iron	AAS	mg/L	0.15
12.	Lead	AAS	mg/L	0.20
13.	Manganese	Periodate	mg/L	0.009
14.	Mercury	AAS	mg/L	0.001
15.	Nickle	AAS	mg/L	0.065
16.	Selenium	AAS	mg/L	0.012
17.	Chromium	AAS	mg/L	0.03
18.	Zinc	AAS	mg/L	0.34
19.	Arsenic	AAS	mg/L	0.0
20.	Chlorine	HACH 10069	mg/L	0.0
21.	Chloride	*APHA 4500 Cl-B	mg/L	260
22.	Cyanide	EPA-9010	mg/L	0.01
23.	Fluoride	Atomic Absorption	mg/L	1.8
24.	Ammonia	HACH 8038	mg/L	0.07
25.	Total Toxic Metals	Atomic Absorption	mg/L	0.366
26.	Phenolic Compounds (as Phenol)	EPA-625.1	mg/L	0.0
27.	Boron	AAS	mg/L	0.00
28.	Barium	AAS	mg/L	0.03
29.	Silver	AAS	mg/L	0.014

Reviewed, Sr. Chemist	Approved Lab. Head



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ANNEXURES





Annexure III: Filled Environmental and Social Screening Checklist of the Sub-project

SINDH FLOOD EMERGENCY REHABILITATION PROJECT

Environmental and Social Screening Checklist

Proposed Project Interventions Details			
Name of proposed project interventions	Construction of Flood Detention Dam at Mazarani Stream		
ID of proposed project interventions			
Proposing agency	PIU-SFERP		
Proposed project interventions location	Construction of Flood Detention Dam at Mazarani Stream		
Proposed project interventions objective	This proposed undertaking aligns with Component-1's Subcomponent 1.1, focusing on the Rehabilitation of Irrigation and Flood Control Infrastructure.		
Estimated cost			
Proposed date of commencement of civil work			
Status of review of technical drawings and specifications			
Screening Question	Yes	No	Remarks
PHYSICAL ENVIRONMENT			
Will the proposed project interventions pose the risk of clearance of vegetation that may result in an increase in the level of suspended solids washing into nearby water bodies?		NO	It is estimated that no tree needs to be removed for the construction of Flood Detention Dam at Mazarani Stream
Will the proposed project interventions pose a risk of contaminating drinking water sources due to construction activities?	Yes		During the construction Phase, different type of activities such as earthwork and concrete work might disturb the surface water quality.
Will the proposed project interventions deplete groundwater because of the water used during road construction activities?		NO	Water consumption will be monitored by keeping records of consumption and capacity building of construction crew during the construction stage and records will be maintained to avoid any wastage.
Will the proposed project interventions result in an increase in ambient air pollution , including chemical and particulate matter due to the construction and operation of related machinery?	Yes		During the construction stage of the sub-project, some adverse impacts on ambient air by suspended dust and noise are foreseen
Will the proposed project interventions result in an increase in ambient noise levels and vibrations due to the operation of construction machinery/vehicles?	Yes		Increase in ambient noise and vibrations is expected due to the operations of heavy construction machinery
Will these ambient noise levels be beyond the specifications in the SEQS ?		No	These are within the limits as per baseline monitoring results.
Will the proposed project interventions lead to erosion hazards ?		No	
Will the proposed project interventions lead to increased soil erosion ?		No	
Will the proposed project interventions result in the generation of hazardous and/or non-hazardous waste ?		No	Combustible, non-combustible and hazardous waste will be temporary stored on-site at the designated location and handed over to the approved waste contractor for the



			recycling and safe disposal
Will the proposed project interventions result in potential increased health risks for project workers and communities (e.g. COVID-19)?	No		Screening will be carried out before hiring the labor
Is the proposed project interventions being implemented in an area with high natural hazard risk ? (e.g. floods, earthquakes, landslides)	No		The proposed work will improve the drainage without any environmental consequences
ECOLOGICAL ENVIRONMENT			
Will the proposed project interventions potentially cause any adverse impacts on habitats, ecosystems, and/or ecosystem services ?	No		No protected areas were observed in primary impact zone of sub-project area.
Will any rehabilitation & improvement works be located in areas that would promote the conversion of natural habitats ?	No		
Will any proposed project interventions proposed project interventions be located on or near sensitive environmental areas , including national parks and protected areas?	No		No sensitive receptors were observed in primary and secondary impact zone.
Are the proposed project interventions activities likely to pose risks to any endangered species ?	No		As far as sub-project area is concerned none of the endemic or endangered species of both flora and fauna were recorded.
SOCIAL ENVIRONMENT			
Will the proposed project interventions involve land acquisition ?	No		No land acquisition is involved as the proposed sub-project is owned by Sindh Irrigation Department.
Are there any forced labor or child labor risks associated with contractors or other third parties involved in implementing this proposed project interventions?	No		Child and forced labor are not allowed on the sub-project site
Is labor influx expected during the implementation of the proposed project interventions? Please estimate the strength of the anticipated outside labor force .	No		A large-scale labor influx is not expected because of the availability of local labor supply in the sub-project area and the scale of works anticipated under the sub-project
Will local labor be used for the proposed project interventions activities? Please estimate the strength of the anticipated local labor force.	Yes		Local operators/drivers will be preferred with valid driving licenses having experience driving heavy vehicles like dozers, dumpers etc.
Will there be any temporary or permanent displacement as a result of the proposed project interventions activities?	No		None of the infrastructure exist within the RoW, no resettlement is expected due to the rehabilitation of proposed project
Are there expected to be any traffic-related issues as a result of the proposed project interventions activities, particularly during the construction phase?	Yes		Traffic Management Plan will be developed and implemented to address the traffic management related issues during the rehabilitation works in sub-project area.
Are there any recognized Indigenous Peoples present in the proposed project interventions area, and are they likely to be impacted by the project, either positively or negatively ?	No		No indigenous peoples were found in the impact zone



Are the proposed project interventions likely to have impacts on important religious/cultural heritage sites ?	No	No archeological site is found within the impact zones.
Have there been any past security-related issues at the proposed project interventions site?	No	No security related issues were found in the impact zone
Has stakeholder engagement taken place in the proposed project interventions area?	Yes	Site visit was carried out to identify all the stakeholders that either work or reside in the sub-project area, initial identification of potential positive and negative impacts was also conducted.
Were vulnerable and indigenous groups involved in stakeholder consultations? (e.g. women, minorities, economically disadvantaged individuals, etc.)	No	No indigenous groups were found in the impact zone.

RISK CLASSIFICATION

Step	Recommendations/Findings
Risk category identification	Low-Medium risk level
Recommendation on type of E&S instruments required.	ESMP
Summary of screening findings	The potential risks outlined are anticipated to be temporary and reversible, with no lasting effects expected on the designated project intervention areas.
Name of person conducting screening	Dr. Maryam and Mr. Haris
Name of the person endorsing screening findings	Mr. Vijaye



Annexure IV: WHO Permissible Limits for Heavy Metals in Soil

Sr. No	*Elements	*Target Value of Soil (mg/kg)
1.	Cd	0.8
2.	Zn	50
3.	Cu	36
4.	Cr	100
5.	Pb	85
6.	Ni	35

*Target values are specified to indicate desirable maximum levels of elements in unpolluted soils.

Annexure V: Suggested Due Diligence Measures

Stage of Contractual Process	Suggested Due Diligence (to be Included in The Contracts)
Before bidding	• Ensure that the terms of reference clearly define the supervision engineer's responsibilities regarding oversight of, and reporting on, labor influx and workers' camps. • Ensure the team skills in the terms of reference include key staff qualified and experienced in managing similar projects, and demonstrated capacity to manage social and environmental issues, including issues about community health and safety. • Ensure that the project GRM is established and its use is widely publicized.
Preparation of bidding documents	• Review contract conditions included in bidding documents to (i) Ensure that the relevant mitigation measures in the ESMP are reflected and budgeted in the contract, (ii) Ensure the ESMP forms part of, and is explicitly referred to in the bidding documents. (iii) Identify relevant provisions (workers, camps, child and forced labor, occupational health and safety, grievance redress, etc.) regulating the contractor's responsibility and identify any gaps, inconsistencies or areas of concern that could be addressed through additional provisions in the "particular conditions of contract" and/or technical specifications (iv) Include a requirement that all workers sign 'Codes of Conduct' governing behavior, and identifying sanctions (v) identify that training programs on implementing the Codes of Conduct, etc. will be undertaken by external providers • Ensure the contract conditions and matrix of consequences specify what type of penalty the contractor will face if the provisions of the ESMP and CESMP including OHS MP are not adhered to— including by subcontractors. This may include direct consequences to contractors in the form of penalties for poor performance on social and environmental matters or specific Performance Securities for ESMP and CESMP compliance. • Ensure that bidding documents clearly indicate OHS standards that are going to be applicable to different aspects of the works • Ensure bidding documents make clear the responsibilities of the contractor to prepare and adhere to a CESMP based on the ESMP and that no civil works will commence until the CESMP has been approved by the supervision engineer. • Ensure the bidding documents detail how the contractor and supervision engineer will be required to monitor and report on the impacts on the local community, issues related to labor influx



	and workers' camps. • Propose Key Performance Indicators (KPIs) for Contract Management, reflecting issues and risks specific to the contract and the monitoring plan.
Bidding evaluation	• Review the bid evaluation report and request to review the bids where appropriate, to verify for the recommended bidder that document related to the ESMP, safeguard implementation capacity, and other obligations of the contractor required to be submitted with the bid are sufficiently detailed and cover the contractual requirements. • Require the contractor's representative or dedicated community liaison staff to have the ability to communicate in the language of the Borrower and/or the local language. • Verify that the contract management framework identifies clearly lines of communication and that these are formalized and a consistent record is provided. • Ensure that the contractor meets the project's OHS requirements for capability and experience.
After contract signing	• Prior to commencing works, the contractor submits CESMP(s) based on the ESMP, which includes specific management plans for: (i) work activities; (ii) traffic management; (iii) occupational health and safety; (iv) environmental management; (v) social management; and (vi) labor influx. • Supervision engineer reviews and approves the CESMP— with inputs from appropriate Government agencies—before any works start. For moderate-risk sub-projects, the supervision consultants should review and clear the CESMP. The borrower should disclose the approved CESMP. • Supervision Engineers must approve the occupational health and safety management plan is approved before the contractor is mobilized at site



Annexure VI: Written Particulars of Employment

1. Name of Employer
2. Name of Employee
3. Date Employment began
4. Wage and Method of Calculation
5. Interval at which wages are paid
6. Normal Hours of work
7. Short description of employee's work
8. Probation Period
9. Annual Holiday Entitlement
10. Paid Public Holiday
11. Payment during sickness
12. Maternity Leave (if employee female)
13. Nursing Break Entitlement (for female employee)
14. Notice employee entitled to receive
15. Notice employer required to give
16. Any other matter either party wishes to include

Notes:

- (a) An employee is free to join a trade union or staff association, which is recognized by the undertaking. The address of the Trade Union or Staff Association is:
- (b) The grievance procedure and disciplinary procedure in this undertaking requires to be followed when a grievance arises or disciplinary action needs to be taken.
- (c) When any heading is inapplicable, enter NIL.

.....

Employer's signature

Witness

.....

Employee's signature

Witness

.....

Date

Date



Annexure VII: Sample Plan for Contractor's ESMP (CESMP)

	
DRAFT CONTRACTOR'S ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN (CESMP) FOR Rehabilitation of -----	
Sindh Flood Emergency Rehabilitation Project (SFERP)	
December 2023	



S. NO	DATE	PREPARED BY	CHECKED BY	APPROVED BY PIC	REMARKS
1.		The Contractor			



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ABBREVIATIONS / DEFINITIONS

CESMP	Contractor's Environmental & Social Management Plan
CFP	Chance Finding Procedure
CLO	Community Liaison Officer
E&P	Equipment & Plant
EIA	Environment Impact Assessment
EO	Environmental officer
SEPA	Sindh Environmental Protection Agency
ESIA	Environment Social Impact Assessment
GBV	Gender Based Violence
GRC	Grievance Redress Community
GRM	Grievance Redress Mechanism
HSE	Health, Safety & Environment
I/C	In-charge
IEE	Initial Environment Examination
MOU	Memorandum of Understanding
OHSO	Occupational Health Safety officer
PCIS	Physical and Cultural Infrastructure
PIC	Project Implementation Consultants
PM	Project Manager
PPE	Personal Protective Equipment
SEA	Sexual Exploitation & Abuse
SDS	Safety Data Sheet
SH	Sexual Harassment
SM	Site Manager
WMP	Waste Management Plan

Abbreviations / Definitions



1. INTRODUCTION

The CESMP represents the environmental & social impacts and mitigations of Component- 1: Infrastructure Rehabilitation, which has the sub-project/sub-components of the project including Rehabilitation of Flood Protection Infrastructure. The proposed sub-project falls in District -----. The recent floods (2022) have damaged the ----- -- with some loss to agricultural land and property. The floods water also submerged the adjacent area.

Rehabilitation/restoration works are limited to the existing Right of Way (RoW) hence, the proposed project will have some medium-minor adverse environmental impacts that are reversible in nature and site-specific with short duration. Therefore, this sub-project falls under the moderate risk category under the ESMF of the SFERP. The ESMP has been prepared accordingly to meet the moderate risk level requirements. This CESMP has been prepared by (The Contractor) E&S Staff in line with guidelines provided in ESMP document.

2. PROJECT DESCRIPTION

-

Figure 2-1: Location of Sub- Project

2.1 Applicable legislations & World Bank Standards

As per ESMP following cross sectorial legislation in Sindh are applicable to contractor's activities, which are shown in **Table 2-1**.

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Table 2-1: Key Applicable Cross-Sectoral Legislation in Sindh

Legal Instrument	Scope and Applicability	Relevance
Sindh Environmental Protection Act, 2014	Sindh EPA is responsible for ensuring the implementation of provisions of the Act in Sindh territorial jurisdiction. Sindh EPA is also required to ensure compliance with the SEQS and establish monitoring and evaluation systems.	This sub-project falls under category schedule II – G (2) "Irrigation systems and drainage system with the area of less than 15,000 hectares. Hence IEE has been prepared and got NOC accordingly.
Sindh Climate Change Policy, 2022	The policy aims to identify the effects of climate change, provide solutions and implement framework/ plans to mitigate its effects, among other objectives - all of which are in line with the National Climate Change Policy.	The proposed SFERP project has been developed to cater to the Climate change impacts, which are severe floods, damaged infrastructure, and communities such as women and children.
Sindh Irrigation Act with Amendments in 2011	This act was unanimously amended in 2011 to remove encroachments from the natural or artificial depression courses on government lands. With a view to removing the encroachments from the natural or artificial depression courses on government lands for smooth flow of rainwater, it is expedient to make some suitable amendments to the Sind Irrigation Act, 1879 by providing severe punishment therein so that the encroachment is removed in the public interest.	The project has not been involved in any type of encroachments therefore this act will not apply to the proposed sub-project.
The Sindh Solid Waste Management Board Act, 2014	The Sindh Solid Waste Management Board Act, 2014 passed unanimously in March 2014, for the collection and disposal of all solid waste, to arrange for effective delivery of sanitation services, to provide a pollution-free environment and to deal with other relevant matters.	The proposed project may generate different types of solid and liquid wastes; therefore, this act shall apply to the proposed sub-project to deal with relevant matters.
Land Acquisition Act 1894	Empowers the government to acquire private land for projects of national importance and lays down the acquisition procedure.	No land acquisition is involved as the proposed subproject interventions are within the existing ROW. Efforts will be made to minimize LAR and economic resettlement issues. If the land for the project is acquired the acquisition process shall comply with RPF which has been prepared for the SFERP.
The Sindh Forest (Amendment) Act, 2012	Regulates forest resources. Empowers the government to declare any forest area reserved or protected.	Not relevant as there is no reserve or protected forest near the sub-project area.
The Sindh Wildlife Protection Ordinance 1972 (Amendment 2001, 2010) Act, 2007, 2020	The law specifies three broad classifications of the protected areas: - a). National Parks . b). Wildlife Sanctuaries - c). Game Reserves -.	None of the interventions is likely to be carried out within or near protected areas.

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Employment of Child Act, 1991	In accordance with this Article, the Employment of Child Act (ECA) 1991 disallows child labour in the country. The ECA states that no child shall be employed or permitted to work in any of the occupations set forth in the ECA (such as transport sector, railways, construction, and ports) or in any workshop wherein any of the processes defined in the Act is carried out.	The contractor will be bound by this Act to disallow any child labour at the sub-project site.
The Sindh Occupational Safety and Health Act, 2017	The clauses relevant to the project are those that concern health, safety and welfare of workers, disposal of solid wastes and effluents, and damage to private and public property. The Act also provides regulations for Compulsory vaccination, inoculation, and Precautions against contagious or infectious diseases at workplaces.	All these regulations will apply to the project construction's contractor.
The Antiquities Act 1975	Preservation and protection of antiquities (any object more than 75 years old). Empowers the government to declare any antiquity as protected.	No protected antiquity within the sub-project area only chances find the procedure will apply.
Sindh Cultural Heritage (Preservation) Act - 1994	The Act 1994 provides rules and regulations to preserve and protect ancient places and objects of agricultural, historical, archaeological, artistic, ethnological, anthropological and national interest in the province of Sindh.	This act may be applicable in a specific situation. I.e. only chance find.
The protection against harassment of women at work place Act, 2010 (Amendment Act 2022)	The protection against harassment of women at work place Act, 2010 (Amendment Act 2022) is a legislation in Pakistan aimed at preventing and addressing harassment of women in the workplace	This act will be applicable for PSEA "Prevention of Sexual Exploitation and Abuse" at workplace

2.2 World Bank Environmental, Health & Safety Guidelines

World Bank Group's Environmental, Health, and Safety (EHS) Guidelines apply to the proposed project. In particular, contractors will be required to implement the General EHS Guidelines (April 2007).

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Table 2-2: World Bank Env. & Social Standards Relevant to the Project

Environmental and Social Standards	Relevance to the Project
ESS1 – Assessment and Management of Environmental and Social Risks and Impacts	Relevant.
ESS2 – Labor and Working Conditions	Relevant.
ESS3 – Resource Efficiency and Pollution Prevention and Management	Relevant.
ESS4 – Community Health and Safety	Relevant.
ESS5 – Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant.
ESS6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant.
ESS7 – Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not relevant.
ESS8 – Cultural Heritage	Relevant.
ESS9 – Financial Intermediaries	Not relevant.
ESS10 – Stakeholder Engagement and Disclosure	Relevant.

3. PURPOSE OF CESMP

The purpose of this CESMP is to minimize or offset to the extent possible, the adverse environmental, social, health & safety related impacts likely to arise during the construction phase. The Plan will be applicable to all activities being constructed by the Contractor. Moreover, this plan will also demonstrate:

- ◆ a clear statement of environmental and social policy to be adopted for the works
- ◆ Details of specific actions and mitigations to be implemented on site to prevent or
- ◆ reduce the environmental and social impact of the works
- ◆ Details of proposed internal monitoring actions to ensure implementation of mitigations
- ◆ Details of the administrative framework under which the plan shall be implemented.
- ◆ The CESMP is based on bidding documents studies, contract conditions, Environmental & Social Management Plan.

This CESMP will ensure that construction activities are carried out in a way that meets the goals of the environmental and social safeguard standards of World Bank, performance standards and national (Pakistan) environmental laws and regulations applicable to the construction works. CESMP also intends to ensure Good International Industrial Practices (GIIPs) for environmental, health & safety management program.



4. CESMP Objectives

- ◆ Draw responsibilities for Contractors and other members of the Project team for the Environmental and social management of the project.
- ◆ Assess Environmental, Social, Gender, health and safety training requirements to implement a training program that supports the achievement of personnel competency in relation to environmental, social, health and safety compliance during implementation of sub project activities.
- ◆ Facilitate the implementation of the mitigation measures and implementation of monitoring plan
- ◆ Define a monitoring mechanism and identify monitoring parameters to ensure effective implementation of the mitigation measures and reporting thereon.
- ◆ Describe Social Management Framework to mitigate potential social impacts, facilitate communication and support local area development.
- ◆ Provide a procedure for timely action in the face of unanticipated Environmental and Social situations.
- ◆ Maximize potential project benefits and control negative impacts.
- ◆ To deal with Environmental, Social and Gender issues generated during implementation of Sub Project
- ◆ To ensure that Environmental, Social actions are in phase with engineering and other activities.
- ◆ To redress Community Grievances such as environmental, social and Gender issues through establishing effective GRM at site



5. ORGANIZATIONAL FRAME WORK

For effective Implementation of CESMP, Contractor shall deploy Health, Safety and Environment staff with appropriate skills for ensuring effective compliance of HSE standards, Code of Conduct for staff as described in HSE Plan part, achieving level of performance, site supervision, implementation of Contract guidelines and CESMP requirements.

5.1 Key Project EHS Staff

Following staff is responsible and will be deployed at site for adequate management of CESMP.

- ◆ Project Manager (Contractor's Representative)
- ◆ Occupational Health and Safety Officer (OHSO)
- ◆ Environmental Officer (EO)
- ◆ Social and Gender Expert / Community Liaison Officer (CLO)
- ◆ Doctor/Dispenser

Note: CV's of above-mentioned staffs are attached as **Annexure 1**.



6. CONSTRUCTION CAMP MANAGEMENT PLAN

The project Manager will ensure that all construction camps and welfare facilities shall be designed, constructed and maintained in accordance with the company set procedures. The following shall be ensured:

- ◆ General Arrangements for Camp Construction
- ◆ Construction camp hygiene
- ◆ Kitchen Areas/Food Storage & Quality
- ◆ Personal Hygiene
- ◆ Toilet Sanitary Facility and Laundry
- ◆ Temporary Electrical Facility, Internet accessibility and Installations
- ◆ Firefighting/Emergency Response System
- ◆ Insecticides/Mosquito Control
- ◆ Sewage Handling
- ◆ Evacuation Routes and Emergency Exits
- ◆ Medical Facilities
- ◆ Bunded Oil Storage impermeable area.
- ◆ Assembly points.
- ◆ Site office.
- ◆ Labor Camp
- ◆ Staff residence
- ◆ Parking area

6.1 Facilities for Labor and Construction Camps

Staff quarters and labor camps shall be provided with all necessary services for drainage, and lighting which will be provided through generators, internet, gas, roads, paths, parking places, fencing, sanitation, and firefighting equipment, etc. All labor camps, workshops, and storage areas shall be built on hard compacted ground with sufficient binding so as to prevent the loss or infiltration of leaked or spilled fluids into surrounding soils, groundwater, or water courses. Traffic signage shall be displayed in the camps.

6.2 Camp Location

- ◆ Living facilities shall be located in areas not at risk of flooding or other natural hazards and within a reasonable distance from the worksite, to which safe, free transport is provided where required. The living facilities shall be built with adequate

materials, kept in a good state of repair, clean and at least 500 meters away from local communities if any.

- ◆ The living accommodation, and immediate surrounding area, shall be provided with adequate drainage to avoid the accumulation of stagnant water.
- ◆ Adequate ventilation, natural light and emergency lighting shall be provided.

6.3 Drinking Water Supply

Access to a free, safe, readily available potable water source shall be provided at all times. Drinking water quality shall meet WHO standards & Sindh Environmental Quality Standards. Prior to use, the contractor shall arrange for tests on samples of each drinking water source from a laboratory approved by the Supervision consultant on a monthly basis. The results of these tests shall be submitted to the Supervision Consultant. Each supply of drinking water shall be conspicuously marked by an appropriate sign. All water storage tanks shall be covered to avoid the risk of contamination.

6.4 Room / Dormitory Facilities

Floors to rooms/dormitories shall be constructed, float finished concrete, or other similar solid, washable material. Rooms/dormitories shall be maintained to a liveable standard and cleaned daily.

A minimum spacing of 1m (3.3ft) shall be provided between beds /cots and one bed/cots should be provided per resident. The use of bunk beds shall be avoided. Each worker shall be provided with an appropriate mattress, pillow, cover, clean bedding and mosquito net. Bed linen shall be washed regularly and treated with repellents as necessary. Cupboards for residents shall be provided for personal storage, with separate storage being provided for any clothing or Personal Protective Equipment required for staff to carry out the work assigned to them.

6.5 Sanitary Facilities

The contractor shall provide and maintain hygienic, well-lit and ventilated sanitary facilities. Sanitary facilities shall be provided within separate buildings in the vicinity of rooms/dormitories. Separate latrines and washing facilities shall be provided for males and females (if females working on site) with total isolation by wall or by location. A minimum of one hand wash facility, one latrine and one shower shall be provided for every ten persons. 1/10 Rule will be followed properly.

- ◆ Latrines (Toilets) shall be clearly distinguished in a language understood by those using them to avoid miscommunication.
- ◆ Washing facilities, including showers, shall be provided at readily available places within the immediate vicinity of every latrine. Washing facilities shall include a supply of clean running water, soap and clean towel.

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- ◆ All sanitary facilities shall be built from easily cleanable material and shall be cleaned daily. Sanitary facilities shall be built so as to provide adequate privacy. All doors shall be lockable.

6.6 Canteen, Cooking and Laundry Facilities

- ◆ Canteen, cooking and laundry facilities shall be built from easily cleanable materials and kept in a clean and sanitary condition. All such facilities shall be cleaned daily.
- ◆ Adequate facilities for washing and drying clothes shall be provided.
- ◆ Kitchens and other areas used for food preparation shall promote good food hygiene and protect against contamination. Kitchens shall include raised, smooth, easily cleanable, non-toxic and non-corrosive surfaces for food preparation. Wood burning will not be taken during cooking. Cooking and other activities will be done by gas provision through gas cylinder
- ◆ Adequate facilities for cleaning, disinfecting and storage of kitchen utensils shall be provided throughout the Contract period. Kitchens shall provide facilities to promote good personal hygiene, such as adequate hand wash and hand drying facilities. Food waste and other refuse shall be adequately deposited in sealed containers and regularly removed from the kitchen.
- ◆ Kitchens shall be sheltered and separated from living quarters.
- ◆ The contractor shall provide sufficient fuel for cooking inside camps, to prevent the collection of firewood.



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6.7 Standards for Nutrition and Food Safety

The WHO safer food process shall be implemented. Food shall be made available to workers and shall contain an appropriate level of nutrition value and consider religious / cultural backgrounds.

6.8 Leisure, Social and Telecommunications Facilities

Basic collective social/rest/recreational spaces shall be provided. Workers shall be provided with dedicated spaces for religious observance if so warranted.

6.9 Parking Area

Sufficient parking area for material/equipment transportation vehicles, light vehicles shall be ensured.

6.10 Implementation of Code of Conduct

The contractor is responsible for implementing the environmental and social code of conduct and ensure GBV/SEA & SH free environment in the construction camp.



7. TRAFFIC MANAGEMENT PLAN

7.1 Purpose

This plan has been prepared to fulfill a contractual obligation, provide guidelines and set criteria for the safety of the personnel, assets, general public and environment being affected by the movement of vehicles and equipment for the construction of the Project.

The following details based on the Environmental Code of Practice shall be considered

- ◆ Access routes for material deliveries to storage areas shall be ensured that it will not impact local traffic.
- ◆ Material-carrying vehicles will not disturb local traffic. Delivery vehicles should not be allowed to queueing on the local road.
- ◆ Loading / unloading points for deliveries are in the storage areas and shall not impact local routes and traffic.
- ◆ Appropriate warning signs should be displayed at different locations near the main barrage e.g. crossing points, pedestrian walkways, diversions, etc.
- ◆ Several flagmen shall be assigned to control and guide delivery vehicles to ensure smooth traffic flow.
- ◆ The contractor shall minimize traffic disruption by selecting non-peak hours for its vehicle's operation if possible
- ◆ The contractor shall ensure that high traffic flow is prohibited during working hours
- ◆ The contractor shall closely monitor the Traffic control management plan and ensure its implementation.
- ◆ Local authorities/District Management and traffic police shall be involved in handling traffic flow while the flow is at peak if required.
- ◆ They shall ensure regular sprinkling of water on haul routes to minimize dust/erosion.
- ◆ Speed limit signs shall be placed, and speed limits shall be followed and monitored regularly.
- ◆ Safe & defensive driving training sessions shall be conducted regularly.

7.2 Speed Limit

The speed limit shall be 10 - 20 km/hr on the project site and camp roads. This limit shall apply to all kinds of vehicles. On main roads, traffic-assigned speed limits shall be strictly followed by all drivers.



7.3 Road Safety Signs

- ◆ It shall ensure that depending upon the hazard identified, all required road safety signs are affixed at required locations and kept well visible and in good condition.
- ◆ Road safety signs shall be shifted according to progress in the construction phases.
- ◆ Barricading shall be used where required.

7.4 Transportation of Workers

- ◆ Camps of workers should preferably be located near the site so they can walk to the site on foot.
- ◆ However, if the camp is far from the site workers shall be provided with adequate means of transportation from camp to work sites and back to camps.
- ◆ It shall be ensured that the safest route is selected for the transportation of workers from camp to the work site and back.
- ◆ Vehicles transporting workers shall be well maintained and kept in excellent working condition, regular servicing shall be performed to keep the vehicle clean and tidy.
- ◆ Vehicles shall be parked in the designated parking slots to load and unload workers, workers shall not be allowed to board or get down from a moving vehicle.
- ◆ Drivers of the vehicles shall be instructed to only move the vehicles once all the workers have boarded, doors shall be closed and all workers have taken their seats.
- ◆ Vehicles shall leave the camps at a predetermined time which shall be informed to all workers, at the end of the work shift, vehicles shall leave the work site based on the planned time. Workers who are required to perform extended hours with the approval of the Engineer i/c if needed shall have vehicles available for transportation back to camps when they complete their work.

7.5 Transportation of Construction Materials & Equipment

- ◆ Transportation of construction material, plant and equipment shall be well-planned and executed safely
- ◆ In case of closure of roads while heavy movement, safety boards shall be displayed well before the start of activity and must be approved in advance by the relevant authority.
- ◆ Experienced drivers shall be assigned for transportation of heavy equipment/material to and from the work site
- ◆ All loads shall be properly tied down to the transporting vehicles and shall be checked prior to starting and during the journey
- ◆ Road martial/Flag man shall be assigned for the controlled crossing of transport.



7.6 Site Transport

- ◆ Only vehicles necessary for the construction operation shall be permitted on site
- ◆ Use of horn is not allowed near settlements
- ◆ It shall be ensured that only authorized and competent personnel are allowed to drive vehicles
- ◆ Loads shall be within the safe weight limit for the vehicle and shall not project beyond the vehicle body in such a manner as to present a hazard to other vehicles, pedestrians or adjacent structures
- ◆ Flagman shall be appointed where required, to minimize the incidents, especially to control the tipper truck movement
- ◆ Passengers shall not be carried unless a proper seat is provided
- ◆ Personnel shall not get on or off any vehicle whilst it is in motion
- ◆ All vehicles shall be parked on level ground with the hand brake applied
- ◆ Vehicles shall not block access or emergency points
- ◆ All drivers of vehicles shall be in possession of a valid national license for the class of vehicle.
- ◆ All drivers shall go through an orientation before entering the site.

7.7 Selection of Drivers

- ◆ All drivers shall have valid driving licenses and shall only drive vehicles they are authorized by the competent Authority. they will also have fitness from third-party validation
- ◆ It shall be ensured that drivers are fit and healthy
- ◆ The transport Supervisor shall assess the competency of the drivers before assigning the duty.

7.8 Selection of Vehicles

- ◆ It shall be ensured that vehicles are in perfect working condition.
- ◆ Vehicles shall be selected based on the requirement
- ◆ Selected vehicles shall have valid registration and insurance documents available
- ◆ HTV shall be fitted with reverse alarms.
- ◆ HTV shall have safety equipment installed and in working condition.

7.9 Traffic Violation

- ◆ Disciplinary action shall be taken against violators of project/road traffic rules and regulations.



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Some examples of violations that shall be liable for disciplinary actions include the following key points and are not limited to:

- ◆ Driving without authority
- ◆ Using mobile while driving
- ◆ Over Speeding
- ◆ Not using safety equipment
- ◆ Letting personnel climb on or off while the vehicle is moving
- ◆ Misbehavior with passengers or other drivers.
- ◆ Use of liquor or sedative drugs
- ◆ All the vehicles will be got inspected/ monitored through a third party following the relevant contract clause.

8. RESOURCE EFFICIENCY & POLLUTION PREVENTION AND CONTROL PLAN

The Contractor shall ensure that its construction activities do not result in the contamination of any surface water, groundwater or agricultural soil by adopting methods that will prevent entrance or accidental spillage, solid matter, contaminants, debris, and other objectionable pollutants and wasters into Indus river flowing streams, flowing or dry watercourses, and underground sources.

8.1 Air Pollution Control

- ◆ The Contractor shall ensure that mitigation measures as defined in the ESIA are in place to minimize the impact on health and the environment. The Contractor shall arrange Emission tests of vehicles, and generators through a third party approved by Environment Protection Agency in order to ensure compliance with national guidelines on ambient air quality.
- ◆ Water is to be sprinkled during the construction phase in all mixing areas where dry materials are handled and/or crushed. Temporary access roads to aggregate sites must be included in the dust suppression program.
- ◆ The Contractor shall routinely inspect generators by using a checklist and emission tests through a third party shall be done annually in order to ensure that emissions do not exceed SEQs / NEQs.
- ◆ Materials are to be transported safely in vehicles going to and from the construction sites to reduce spills. Dust suppression measures with the spraying of water should be taken for all roads used for transport.
- ◆ Comply with the national guidelines on ambient air quality standards and shall Implement ECP (Environmental Code of Practices) on Air quality management as defined in the ESA
- ◆ Vehicular traffic through communities will be avoided as far as possible. Vehicle speeds will be kept low if they should pass through communities.
- ◆ Dust Control Systems are an important factor in meeting environmental, health and safety requirements. Water Bowser shall be used to suppress the dust within the construction area.

8.2 Noise Pollution and Control

- ◆ Administration control will be applied to control noise pollution shall be:
- ◆ Warning Signs shall be affixed in noisy areas.
- ◆ Training shall be conducted to create awareness in workers about noise protection.
- ◆ PPE shall be provided for noise protection.
- ◆ Noise survey shall be conducted on regular basis to monitor the level of noise.



- ◆ Moreover, engineering controls will also be taken to control noise and separate rooms shall be constructed for generators and other noisy equipment.
- ◆ Ear plug/ear muff shall be used if the noise level exceeds from SEQs for day and night times.
- ◆ Safety signs and other mandatory hearing protection signs shall be placed in high-noise areas.
- ◆ The Contractor shall maintain construction machinery for the purpose of minimizing construction noise on the work site.
- ◆ The Contractor shall monitor noise and vibration results and adjust construction practices if required.
- ◆ In areas where noise may interfere with communication, suitable alternative arrangements shall be in place.
- ◆ All equipment in orders to keep it in good working order shall be maintained following manufacturers' maintenance procedures.
- ◆ Unnecessary use of alarms, horns and sirens shall be avoided
- ◆ Best available work practices shall be employed on-site to minimize occupational noise levels

8.3 Water Pollution

- ◆ The environmental Officer shall comply with applicable regulations concerning the control and abatement of water pollution as follows
- ◆ Construction activities shall be performed by methods that shall prevent entrance or accidental spillage of solid matter, contaminants, debris and other objectionable pollutants and wastes into flowing streams, flowing or dry watercourses and underground water sources.
- ◆ Pumps shall be provided to transfer fuel from fuel drums/tanks, and manual fuel pouring shall be prohibited.
- ◆ The Contractor shall ensure that caps on drums and tanks are completely sealed after filling.
- ◆ The Contractor shall ensure that drums and tanks are in good condition.
- ◆ Regular maintenance of vehicles and water browsers/ Water Pumps shall be carried out.
- ◆ Minimal generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes), It shall be ensured that these substances must not enter into waterways All waterborne plants shall be inspected daily prior to operation.
- ◆ All fuel tanks/drums shall be shifted and not stored on barges / waterborne vessels.
- ◆ The Contractor shall provide bonding around refueling points on any waterborne vessels to contain any spilled fuel.

- ◆ The Contractor shall ensure spill kits and absorbent material is provided at refueling points on all waterborne plant and ensures that staff involved in refueling operations is trained.
- ◆ Proper storage and disposal of waste shall be ensured.
- ◆ Handling of chemical waste through proper channels/third parties.

8.4 Spill Prevention and Contingency Plan

Spill Prevention and contingency plan describes planning, prevention and control measures to minimize impacts resulting from spills of fuels, petroleum products, or other regulated substances as a result of construction.

8.5 Plant and Vehicle Maintenance

- ◆ Vehicles shall be inspected by Equipment and Plant (E&P) department on a daily basis to check for leakages
- ◆ Vehicles found with the leakage shall not be allowed to move on site

8.6 Treatment of Spills

- ◆ Spill kit including absorbents, neutralizers, PPE's and tools for cleanup, oil spill boom, shovels; plastic bags shall be available to deal with spills.
- ◆ Shovels, plastic bags, and absorbent material shall be present near fuel and oil storage or handling areas to attend the spills and leaks
- ◆ All oil spills major or minor on the ground or in water shall be managed by the HSE team.
- ◆ Contaminated material resulting from spills shall be collected and declared hazardous waste.
- ◆ Contaminated material (hazard waste) shall be disposed of through proper procedure.

8.7 Run-off from Camps and Worksites

- ◆ The campsite shall be provided with all necessary drainage of storm water from the camp, construction area and community settlement.

8.8 Ground Pollution

- ◆ Hazardous substances shall not be discharged onto the ground
- ◆ All possible efforts will be taken to maintain the ground in a better condition & to avoid ground pollution
- ◆ Most Importantly the contractor will import monthly effects monitoring from a third party as suggested by PIC/ Client.
- ◆ The following parameters will be taken into account;



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- ◆ Gaseous Emissions;
- ◆ Physical, Chemical and Biological Parameters of water being used at site;
- ◆ Noise Levels;
- ◆ Ambient air;
- ◆ Disease/Health monitoring;

8.9 Water, Raw Material usage & Monitoring

- ◆ Contractor will maintain record of water consumption and take measures to conserve resources.
- ◆ Use the water efficient equipment and machinery
- ◆ Reuse wastewater generated from camp in gardening and watering of tree plantation purpose.
- ◆ Raw material like stone, crush and other material shall be transported from authorized vendors.
- ◆ Consumption record of fuel and other materials will be managed in order to reduce or optimize the use.
- ◆ Solar Power will also be utilized for camp energy needs.

9. WASTE DISPOSAL AND EFFLUENT MANAGEMENT PLAN

9.1 General

- ◆ The contractor shall minimize the production of waste materials by the 3R (Reduce, Recycle and Reuse) approach and organize disposal of all wastes generated during construction activities by ensuring proper collection and disposal of waste.
- ◆ Prior Disposal certificate of local Municipal/Union Council (UC) will be collected
- ◆ Provide training to personnel in waste management practices and procedures.
- ◆ provide waste drums and waste bins in camp and at each work site
- ◆ Collect waste in color-coded drums as waste types
- ◆ Ensure good housekeeping practices during all operations in the camp or at work sites
- ◆ Maintain all construction sites in a cleaner, tidy and safe condition.

9.2 Prevention & Reduction

- ◆ On the project site this method will take first place as the first principle of waste management, a clear emphasis will be placed on determining how a waste stream can be reduced.

9.3 Waste Segregation

- ◆ Waste shall be collected in color-coded waste bins. These bins shall be labeled in local languages. Hazardous waste e.g. batteries, oil filters, paint containers, oily rags, etc shall be collected in red color-coded drums & should be stored in 'Hazardous waste' containers placed in the waste storage area and finally shall be disposed of as per the category of waste.

9.4 Secure Disposal

- ◆ Site-specific landfill site shall be established as per contract specification

9.5 Kitchen & Food Waste

- ◆ Kitchen waste / Food waste will be prevented by using reusable crockery and conducting training as per the training plan of the canteen staff on prevention, reuse and recycling of food waste. Moreover, waste bins with closing lids will also be provided in the kitchen and messes. Waste from these waste bins will be collected on a regular basis and transported through a vehicle to the final disposal point.
- ◆ The kitchen and food waste will be dumped to convert it into compost for plants

9.6 Camp Waste

- ◆ All the domestic waste from camps will be kept in waste bins provided in camps. Further waste from waste bins will be collected regularly and disposed of at designated disposal points.

9.7 Sanitary Waste

- ◆ The construction activities inherently have the potential to impact on water environment specifically groundwater and surface water. These management and mitigation plans ensure that construction activities are managed in a manner to not cause any negative impact or prevented them. However, the objectives of this plan are to proper disposal of wastewater after septic tank treatment.
- ◆ Provide and maintain hygienic, well-lit and ventilated sanitary facilities.
- ◆ Ensure sanitary facilities shall be provided within separate buildings in the vicinity of rooms/dormitories.
- ◆ All sanitary facilities shall be built from easily cleanable material and shall be cleaned daily.
- ◆ Sanitary facilities shall be built to provide adequate privacy. All doors shall be lockable.
- ◆ Sanitary waste shall be collected and treated in three chambered masonry-built septic tanks
- ◆ The septic tank shall be consisting of 3 chambers/portions for wastewater treatment and it shall be ensured, that the loading rate of the septic tank shall not exceed its treatment capacity
- ◆ The ultimate disposal of sewage would be into a soak pit
- ◆ Further soakage pits shall be constructed with all septic tanks.
- ◆ Arrange annual testing in order to ensure, that the release is within the prescribed limits of SEQS.

9.8 Hazard waste

- ◆ Any hazardous material will not be accepted without a material safety data sheet (MSDS) and shall be provided to the user by the store in charge at the time of issuing material
- ◆ The diesel fueling area shall be kept under controlled access.

9.9 Waste Disposal Method

9.9.1 Construction waste

Dirt, concrete, Plaster, plumbing, heating and electrical parts will be collected and segregated. Mechanical Scrap & wooden scrap will be sent to the scrap yard.

9.9.2 Packing waste

Request the supplier to minimize packing where practicable

9.9.3 Excavated Waste

All excavated waste shall be disposed of at the designated Site.

9.9.4 Medical Waste

Syringes, soiled bandages, expired drugs & dressings will be collected in orange-colored waste bins and will be handed over to authorize medical waste handling authority i-e will be sent to the incinerator of the District hospital or any third party. Needle cutter shall be available with Doctor / First Aider.

9.9.5 Hazardous Waste

The concept of a "cradle to grave" tracking system is considered for proper management of disposal of hazardous waste generated viz cartridges/toners, used oil, grease, used batteries, batteries acid waste, etc shall be collected at source in color-coded waste bins/drums labeled as "Hazardous Waste" stored in tightly closed leak-proof containers, placed waste storage area and finally sent to The Contractor main workshop Hyderabad by complying the rules of Transportation and disposal.

9.9.5.1 Remedial Measures

- ◆ Limit the occurrence of hazardous materials, which increases the risk of Environment, Health & safety impacts
- ◆ Provide sufficient information to all site personnel regarding risks associated with Hazard material through Material Safety Data Sheet
- ◆ Control & manage access to the general waste storage area to ensure Environmental, Health & Safety illustrating the area of storage of Hazardous Waste Material
- ◆ Maintaining the Risk Register
- ◆ Products labeled as "nontoxic" prior to purchase are confirmed and shall be given the highest priority
- ◆ Construction of an impervious pad for storage of Hazard Material
- ◆ Ensure that all the drums/containers & tanks used for storage of Hazardous material viz used oil etc. have no leakage have proper seal arrangement and are in good condition for storage & transportation
- ◆ Ensure regular inspection of the fuel storage area
- ◆ Ensure eyewash facilities
- ◆ Ensure all precautionary measures while handling & storage POL circumvent the environmental pollution



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- ◆ Ensure that all the personnel understand and can implement the action required for safe handling of Hazardous Material.



10. BORROW AREA MANAGEMENT AND RESTORATION PLAN

- ◆ Borrow areas shall be established as per the relevant contract clause or as approved by the Engineer. The Contractor shall be responsible for determining the ownership of land required for borrowing areas other than specified areas in the Contract and shall submit such records to the Engineer.
- ◆ Agree (MOU) with the landowner. However, in the case of Government land, written approval shall be required from the concerned department
- ◆ Slopes of borrow areas shall be maintained.
- ◆ Access routes shall be maintained through regular sprinkling of water.
- ◆ A comprehensive detail e.g. location, area etc of borrow area shall be maintained.
- ◆ Borrow areas shall be reinstated if required.
- ◆ A topography survey of the borrow area shall be conducted before its use all the private or public utilities inside the borrow area such as electric poles, underground water lines, and gas pipelines shall be marked accordingly.
- ◆ A photographic record shall be maintained prior to the start of activities in the borrow area and pictorial evidence shall also be kept after restoration.
- ◆ Adequate access and egress shall be maintained for the movement of the machinery in the borrows area.
- ◆ Dust shall be controlled through regular water sprinkling at least thrice a day.
- ◆ Prepare a list of fauna and flora present in the borrow area



11. DRINKING WATER AND SANITATION PLAN

The Contractor shall ensure access to a free, safe, readily available potable water source at all times. Drinking water quality shall meet WHO standards & SEQS and Sindh factories act guidelines. Prior to use, the Contractor shall arrange tests on samples of each drinking water source from a laboratory approved by the EPA / SEPA annually. The results of these tests shall be submitted to the Engineer. The Contractor shall use water for construction activities after approval from the Engineer.

12. EMERGENCY PREPAREDNESS & RESPONSE PLAN

12.1 Purpose

A good Emergency Preparedness & Response Plan (EPRP) will help people take quick and effective action in the event of an emergency. It will help in easing the severity of the situation and limit the consequences.

EPRP provides procedures and structures for response to emergencies. EPRP provides strategies to combat specific situations and assign responsibilities for implementation.

The emergencies include but are not limited to;

- ◆ Fires
- ◆ Rains/Floods
- ◆ Explosions
- ◆ Civil disturbance
- ◆ Poisoning
- ◆ Structural Failures
- ◆ Workplace violence resulting in bodily
- ◆ Harm and Tolerance
- ◆ Chemical spill

12.2 Emergency Drills

All site personnel/members of the public (if applicable) will follow this plan that shall be tested through exercises/drills quarterly. These drills shall be conducted on the following scenarios;

- ◆ Fire Fighting
- ◆ Medical Evacuation
- ◆ Flooding
- ◆ Thunderstorm
- ◆ Spills of hazardous material
- ◆ Work at height

12.2.1 Fire Fighting

- ◆ The operation on Fire Extinguishers and fire buckets shall be taken according to the **“Firefighting Procedure”** laid for which training shall be given at regular intervals.

- ◆ Maintenance and inspections of firefighting appliances will be ensured through the checklist and regular monitoring.

12.2.2 Emergency Drills

- ◆ Emergency response drills shall be conducted in the camp and the work site, and the observations and debrief notes shall be recorded. OHSO shall analyze the findings and identify any remedial actions required.
- ◆ The emergency procedure shall be updated from time to time to reflect observations made. Training shall be conducted on a regular basis for emergency response teams.
- ◆ The location of emergency facilities e.g. firefighting appliances shall be identified on plans displayed at conspicuous locations.

12.2.3 Emergency Evacuation

- ◆ Activate the emergency disaster siren to evacuate the area safely and ensure that unnecessary personnel leave the site by a safe route. The PM shall assign responsible personnel to advise security to open the facility's main gate for emergency vehicles.
- ◆ For emergency response activities managed by The Contractor, key roles and responsibilities are detailed below:

12.3 Roles and Responsibilities

Key roles and responsibilities are detailed below:

12.3.1 Project Manager (Contractor's Representative)

The Contractor's Project Manager shall be responsible for the implementation of all the details of Environment and Social Management activities given in this CESMP.

- ◆ Providing leadership and direction in the event of an emergency.
- ◆ Ensuring that emergency response planning, preparedness and execution are consistent with the site requirements
- ◆ Ensuring that appropriate field response teams are defined and prepared for the various emergency response scenarios identified in this plan.
- ◆ Notification to the Client of any emergency incident.
- ◆ Providing leadership and direction in the event of an emergency.
- ◆ Ensuring that emergency response planning, preparedness and execution are consistent with the site requirements
- ◆ Ensuring that appropriate field response teams are defined and prepared for the various emergency response scenarios identified in this plan.
- ◆ Notification to the Client of any emergency incident.

- ◆ Following initial notification, the liaison will be made with the Client during the execution of any emergency response.

12.3.2 Environmental Officer (EO)

- ◆ The environmental officer shall be responsible to aid with the practical implementation of CESMP. Specific responsibilities of the Environmental Coordinator officer include;
- ◆ Ensure compliance with national legislation related to the environment and with the World Bank's environmental safeguard policies
- ◆ Oversees and ensures the implementation of the environmental components of CESMP and parallel management plans
- ◆ Reports on non-compliances and promotes corrective actions.
- ◆ Conduct regular inspections to check that impact mitigation measures are being implemented properly
- ◆ When required, arrange environmental training for the relevant.
- ◆ Personnel, The Contractor staff, contractors and service provider
- ◆ Reviews environment performance and reports to the in-charge HSE.
- ◆ To ensure that workers' accommodation meets the basic environmental requirements
- ◆ Maintain Trees Inventory
- ◆ Participate in Monthly Effects Monitoring by the third party

12.3.3 Occupational Health and Safety Officer (OHSO)

- ◆ OHSO will be responsible for site management for the on-site implementation of the CESMP plan. OHSO will specifically aid with the following;
- ◆ To ensure that worker camps & latrines shall comply with The Sindh Occupational Safety and Health Act, 2017, Labor Camp Rules, 1960 & Sindh Factories Act 2015.
- ◆ Prevention of injury to personnel and damage to equipment
- ◆ Provision and ensure the use of protective clothing and equipment
- ◆ Assessments of potential hazards on jobs before work start
- ◆ To ensure that workers' accommodation meets applicable requirements
- ◆ Carrying out hazard identification and risk assessment, in association with the Construction Manager, Civil Supervisor to decide on the best safe methods of work in operation.
- ◆ Determining the cause of any accident or dangerous occurrence and recommending means of preventing recurrence. Arrange necessary OHS training for the workers and other relevant staff
- ◆ The OHSO is responsible for ensuring at the site that provisions are in place for emergency response, including:



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- ◆ Muster points.
- ◆ Arrangements for conducting head counts.
- ◆ Identification and Mobilization of the Fire Team.
- ◆ Setting up drills and exercises.
- ◆ First Aiders with Ambulance.
- ◆ Conduct TBT (Tools Box Talks)
- ◆ Conduct WSTS (Weekly Safety Talks)
- ◆ In the event of any emergency the OHSO shall take the following actions:
- ◆ Shall attend the site of the incident, assess the situation and issue directions to the concerned parties and the Fire Team.
- ◆ Ensure that messages have been communicated to The Field Response Team Leader.
- ◆ Ensure all escape routes and assembly areas are marked by respective safety signs in the field as indicated on the site plan.
- ◆ Evaluate the scale of the incident and decide whether additional resources are required to adequately deal with it.
- ◆ Ensure effective use of PPE.
- ◆ Liaise with site supervision for the mobilization of any plant and equipment necessary for dealing with the emergency
- ◆ Limit access to the area with barriers or other means to prevent unauthorized access
- ◆ Coordinate the reinstatement measures following the stabilization of the incident.
- ◆ Prepare a full report.

12.3.4 Community Liaison Officer (CLO)

- ◆ Ensure access to information by communities and use of localized means to disseminate information.
- ◆ CLO will provide information to communities on employment opportunities, Risks, Impacts and Mitigations prior to the start and end of construction and when other changes in project activities take place
- ◆ CLO will conduct consultation meetings with community leaders
- ◆ Coordinate activities concerning social mobilization and civil society involvement in the project
- ◆ The Community Liaison Officer (CLO) will maintain the Social Complaint Register (SCR) and complain box at the site to document all complaints received from the local communities and the actions taken against each complaint
- ◆ CLO will be inconsistent liaison with management and the community



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- ◆ CLO will also document oral complaints (if any) by the community
- ◆ Community Liaison Officer (CLO) shall be hired having a background in sociology Subject
- ◆ Proper communication & implementation of Communication and Local Recruitment Plan
- ◆ CLO will also handle the issue of resettlement due to dam work. Employment opportunities will be addressed through CLO and Village Focal Points nominated and their frequency depends upon manpower requirements at the site. Community complaints will be maintained on a register and in the complaint Box. Community issues will be communicated as part of the routine HSE meetings held with the management. Actions taken against the complaints will also be maintained to show as issue close-out evidence. the progress will be part of the monthly monitoring and implementation report of the contractor to be submitted at PIC.

12.3.5 Dispenser

- ◆ Holding a Certificate/Degree recognized by Pakistan Medical Commission
- ◆ Able to conduct the bred examination of each patient and also to document clinical findings
- ◆ Able to screen out Blood samples
- ◆ Able to operate BP apparatus and glucometer
- ◆ Able for Main medical record and could give a complete first aid before reaching hospital
- ◆ Able to prescribe proper medication
- ◆ Able to keep a record of all medical proceedings
- ◆ Able to communicate and report the progress as and when necessary.

12.4 Emergency Response Team

In the event of an emergency, the chain of command will be as follows;

Name	Designation	Contact No.
	Site Manager	
	Environmental Engineer	
	Occupational Health & Safety Officer	
	Community Liaison Officer	
	Dispenser	



13. TRAINING PLAN

- ◆ As part of the Contractor's Environmental and Social Management Plan (CESMP) the training plan including the details such as subject, attendees, duration and frequency of the training has been prepared to provide all personnel with adequate information, instruction and training on environmental and social awareness, cultural sensitivity & occupational health and safety (Please see **Annexure 2**). The Contractor shall be responsible for conducting all the specified training through its highly trained Health, Social, and Environmental Management Team with the consultation of PIC. The Contractor shall also hire the services of experts with the prior approval/consultation of PIC for more training necessary and momentous for health, safety, social & environmental particular perspective under the provision of the contract. Training activities shall be recorded and reported on a regular basis.

The Contractor shall:

- ◆ Update the training plan on a need basis.
- ◆ Organize induction training for all staff.
- ◆ Ensure employees are trained in the proper use of equipment in their care to minimize the risk of accidents.
- ◆ Training Plan shall include below subject training as a minimum:
 - ◆ Handling, use & disposal of hazardous material
 - ◆ Waste Management
 - ◆ Efficient & safe driving practices, including road & vehicle restrictions
 - ◆ Actions to be taken in the event of major or minor pollution events on land
 - ◆ Pollution Prevention
 - ◆ Refueling of waterborne plant and Vehicles
 - ◆ Use of spill kits and flexible booms
 - ◆ Safe way to work & hazard awareness
 - ◆ Safe Use of Plant and Equipment
 - ◆ Work at Height
 - ◆ Use of PPE
 - ◆ Emergency Procedures and Evacuation
 - ◆ Fire Fighting
 - ◆ Importance of Tree Plantation
 - ◆ Awareness of site-sensitive areas.
 - ◆ HIV/AIDS/Covid19
 - ◆ COVID-19



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- ◆ Cultural Sensitivities of the local population
- ◆ Grievance Redressal Mechanism
- ◆ Gender Based Violence /Sexual Exploitation and Abuse /Sexual Harassment|
- ◆ Social Mobilization/Consultation
- ◆ Awareness on Social and Cultural Dynamics
- ◆ Gender Issues



14. ENVIRONMENTAL MONITORING PLAN

- ◆ The Contractor Environmental Officer shall be responsible for day-to-day monitoring of compliance with the environmental and social requirements of this specification as well as the requirements of the CESMP.
- ◆ The Environmental Officer shall prepare a monthly report to the Engineer. The format of the monthly report shall mutually be finalized however; it shall be ensured that the requirement of CESMP has been incorporated in the monthly report. The report shall also provide detailed actions taken or proposed by the Contractor in response to any non-compliance identified the report shall be submitted not later than the third of each month.
- ◆ The Environmental Officer shall be available to attend monthly meetings (when and where arranged by the Employer) to discuss environmental and social performance on Site. When instructed by the Employer or Engineer, any other member of the Contractor staff shall be available to attend such meetings.

14.1 HSE Inspections

- ◆ The Contractor shall utilize a number of inspections not only to ensure compliance with the requirements of the CESMP but also to get feedback for the improvement of the CESMP
- ◆ The Environmental Officer shall conduct inspections on day to day basis
- ◆ The Environmental Officer shall be responsible to identify noncompliance and report it to the Site Manager/Project Manager
- ◆ Construction Managers and the area in charge shall be responsible for rectification of highlighted non-compliance
- ◆ The Environmental Officer will also maintain a record of tree inventory.



15. COMMUNICATION AND LOCAL RECRUITMENT PLAN

The following records will be maintained

15.1 Employment

- ◆ Total number of unskilled, semi-skilled, and skilled jobs offered during construction
- ◆ Name and domicile of the employed staff
- ◆ CNIC of Staff will be prioritized
- ◆ Driving license of all drivers will be mandatory.

15.2 Project and Community Interface

- ◆ Record of community complaints and the measures taken to address them.
- ◆ Number of meetings held in various communities and persons who attended

15.3 Local Recruitment Plan

- ◆ The potential employment-related issue includes dissatisfaction among local communities over the number of jobs offered to them, disagreement on the definition of 'local' and also on the distribution of jobs within the local community.
- ◆ The following measures will be implemented:
- ◆ There will be no discrimination and equal opportunities will be provided to the local community through effective methods.
- ◆ A maximum number of unskilled and semi-skilled jobs will be reserved for the local communities
- ◆ Job opportunities will be communicated to local Notable persons of villages through CLO
- ◆ The following may be the salient features of the criteria:
- ◆ For any construction work, an agreed percentage of the labor will be attempted to be hired from the nearest villages
- ◆ If possible, keeping in view the required and available craft category, the jobs within the nearer villages would be distributed in proportion to the unemployed persons available from each village.
- ◆ Village Focal Points (Both Male and Female) from villages will be nominated by the villagers to liaise/interact with the Contractor through CLO.

15.4 Communication for Traffic Management

- ◆ The following measures will be adopted:



- ◆ A strong liaison will be maintained with the community. The community will be knowledgeable in advance of any slow-moving heavy/wide loads that will disrupt local traffic patterns.
- ◆ Vehicles will remain confined to defined designated access roads
- ◆ Project specific speed that is 10-20 Km/hr Limit of vehicle & will be obligatory for all related with the contract
- ◆ To the extent possible, peak traffic times will be avoided for project site traffic.

15.5 Community Relations Management

- ◆ During the currency of the project, active consultation will be maintained with the community through informal and formal meetings.
- ◆ The record of the meeting describing the objective will be maintained by CLO
- ◆ A complaint registering, tracking and Redressal mechanism will be implemented.
- ◆ The non-local project staff will be sensitized to local culture and norms
- ◆ Unnecessary interaction of the local population with the non-local project staff will be avoided.
- ◆ Construction workers not belonging to the local area will be prohibited from entering the residential area

15.6 Grievance Mechanism

- ◆ A grievance can be submitting
 - a. Receiving complaints from **Fixed Complaint Box**
 - b. Complaints from the complaint register
 - c. Directly to Contractor
 - d. Directly to Employer/ PIC
 - e. Through Union Council
- ◆ Forwarded through CLO to Grievance Redressal Committee (GRC)

15.7 Grievance Redressal Mechanism

- ◆ It should be ensured that
- ◆ The grievance recorded register is available at the site.
- ◆ The complaint box is fixed at the site.
- ◆ Immediate action to satisfy the complaint and corrective action information to the complainant
- ◆ Implement corrective action. Record the date, and action taken and present it to GRC.

16. SECURITY PLAN

16.1 Purpose

- ◆ The purpose of this part is to describe the primary functions in security necessary for the prevention of personal injury, loss of equipment materials, etc. due to carelessness, negligence and vandalism and pilfering.

16.2 Scope

- ◆ This specification defines the rules, regulations and responsibilities which must be implemented in order to effectively control security operations on the work scope of the site. The main objective of security is to protect the property from fire & theft and to stop unauthorized entry into the specified area. The Contractor's security rules and regulations will be incorporated to the maximum possible extent into the job site security rules as per the requirement of the site.

16.3 Method and Responsibilities

16.3.1 Responsibilities

- ◆ PM is responsible for arranging meetings with the security representatives to outline the Contractor requirements for security and to incorporate any requirements into the security plan of the project.
- ◆ OHSO will be responsible for implementing the Security Plan, monitoring and supervising its implementation and administering the subsequent operations.
- ◆ To provide security either through a Security Company or Local Watchman to prevent unauthorized access to the site and camp area.
- ◆ To ensure that Local language speaking staff shall be available to communicate with the local community.
- ◆ OHSO shall ensure that emergency contact numbers have been displayed clearly and prominently at different locations in the camp and working area.
- ◆ The Community Liaison Officer with the consultation of the PM shall coordinate with concerned local Law Enforcement Agencies.
- ◆ A record shall be maintained to keep track of the headcount of persons Identification of Employees
- ◆ The Contractor employees working on site will be issued site identity cards on completion of the HSE induction course as per The Contractor's procedures.
- ◆ All employees on site must carry their site identity card at all times, non-compliance with this rule can exclude the person from the site until the site identity card is produced.



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- ◆ Employees must not use any site camp area for the purpose of domestic habitation. Any employees in breach of this rule will have their site identity card confiscated followed by their expulsion.
- ◆ When a person leaves the site on termination or transfer he must return the site identity card.
- ◆ Personnel must have the appropriate Personnel Protective Equipment (PPE) prior to entry to the site; no compliance with this rule can result in immediate expulsion from the site.

16.3.2 Visitors

- ◆ The temporary visitors will be provided with the visitor's card after registration of their name, the reason for the visit and the address with respect to the company. The visitor card/batch will be signed off and returned to the gate at the end of the visit. Visitors will be accompanied at all times on-site by a responsible person until or unless they are properly inducted and issued a full identity card.
- ◆ Ensure that all visitors are made aware of any HSE regulations which are in force on site and of fire and emergency evacuation procedures.
- ◆ The visitor's book will be placed in order to note their remarks and comments.

17. TREE PLANTATION PLAN

17.1.1 Removal of Trees

- ◆ As per instruction of Engineer, _____ shall ensure removal of tree(s) along with stumps and roots to a depth to ensure complete removal of roots and stumps and disposal to designated place, so as the cut/removed tree shall be transplanted to another location. The following procedure shall be adopted for cutting the tree having girth of 6 inches or larger.
- ◆ According to ESMP there are _____ mature and _____ immature trees, out of which _____ trees will be cut down or removed.

17.1.2 Tree Marking

- ◆ Tree(s) that is unavoidable to be cut shall clearly be marked with a cross on two sides using a highly visible paint. The marking shall be located approximately 4.5 feet from the base of the tree(s).

17.1.3 Tree Inventory

- ◆ _____ shall prepare an inventory of all trees to cut. The inventory shall include the following details for each tree:
 - ◆ Reference Number
 - ◆ Location
 - ◆ Specie
 - ◆ Girth
 - ◆ Approximate height
 - ◆ Photograph of tree

17.1.4 Approval

- ◆ Prior written approval of cutting of tree after joint visit & verification of an inventory shall be sought from the Engineer before any tree is cut.

17.1.5 Tree Cutting

Once the approval is accorded by the Engineer, _____ shall proceed to cut the sanctioned tree and stored in designated source, secured storage area. Each cut section of tree will be marked with a unique reference number which shall correspond to a reference number given on the tree inventory.



17.1.6 Tree Handover

- ♦ When a batch of tree shall be ready, Employer shall be informed via Engineer. Inventory of trees to be handed over shall be reviewed by employer in nearby stack area. Employer shall arrange transport from storage area following formal handing/taking over of the trees.

17.1.7 Tree Plantation

- ♦ As per World Bank's safe guards and Environmental and Social Mitigation & Monitoring Plan, _____ shall plant at a specified ratio five trees against each cut tree. _____ shall be responsible for nourishment, growth and protection of newly planted plant sapling in accordance with accepted horticulture practice throughout the contract period.



18. PHYSICAL CULTURAL INFRASTRUCTURES (PCIS)

- ◆ No archaeological site was observed near (within 500 meters) the project area and no physical cultural resources at or near the proposed sub-project; sites are observed that may likely be affected by construction activities.
- ◆ In case of discovery of an unidentified graveyard or sensitive area, The Contractor shall notify the Engineer and the following Chance Find Procedure will be adopted:
- ◆ On discovery of archeology resources, all work in the area shall be stopped
- ◆ The engineer shall be informed about the discovery
- ◆ A brief report with photo, plan and location shall be submitted to the client and Engineer
- ◆ Work shall commence again according to the recommendations and comments provided by the Engineer.

19. Labor Management Plan

19.1 LMP Objectives:

- Guarantee compliance with labor regulations for all Project workers, whether they are direct workers or not, generating the appropriate working conditions in compliance with applicable regulations;
- Promote fair and equitable labor practices for the fair treatment, non-discrimination and equal opportunity of all workers (male, female and transgender);
- Establish, promote and manage a healthy management -worker relationship;

19.2 Overview Of Labor Use In The Project

Contractor will involve different categories of workers for different activities associated with the project. ESS2 classifies project workers into the following four groups: (i) Direct workers, (ii) Contracted workers, (iii) primary supply workers, and (iv) Community workers.

19.3 Labor Requirement

ESS 2 categorizes the workers into: direct workers, contracted workers, community workers and primary supply workers.

19.4 Assessment of Key Potential Labor Risks:

The main labor risks associated with the contractor are assessed to be related to risks of accidents and incidents at the work place, potential child labor and forced labor, labor influx and associated community health and safety risks, including Sexual Exploitation and Abuse (SEA)/Sexual Harassment (SH) risks spread of communicable diseases (i.e. COVID-19), risk of exclusion of hiring from minority communities (like religious minorities, gender minorities) and the overall capacity of the implementing agency to manage and mitigate the environmental and social (E&S) risks and under which the Project is being implemented.

19.5 Overview of Labor Legislation: Terms and Conditions

There are a number of labor laws in Pakistan. These labor laws are broad and contain several ordinances, acts, rules and regulations and other statutes relating to industrial, commercial, and labor establishments. The contractor will follow all the labor laws.

19.6 Overview of Labor Legislation: Occupational Health and Safety

The protection against OHS risks to the workers is embodied in various international, national and provincial laws to promote and maintain the highest degree of physical, mental



and social well-being of workers in their employment from risks resulting from factors adverse to health.

19.7 Age of Employment:

The contractor will prohibit employment of children below the age of 14 years.

19.8 Terms and Conditions of Employment

Contractor will prefer to hire local employees especially in non-skilled labor.

19.9 Sexual Exploitation and Abuse

Contractors will be made a written contract with their workers materially consistent with objective of ESS2, following procedures as specified in the World Bank's Procurement Regulations. The workers will be required to sign a Code of Conduct (CoC) prepared by the Contractors and reviewed and approved by PIUs. GBV/SHE related complaints/grievances will also be handled under the Labor GRM.

19.10 Labor Rights in the Constitution of Pakistan (1973)

The Contractor will follow to all labor rights, international labor standards and federal labor laws which are applicable in Pakistan.

19.11 Grievance Redress Mechanism (GRM) for Workers

The contractor will establish a GRM mechanism at its respective construction sites. It will be obligated to set up a GRM significantly to redress complaints relating to workers deployed for construction works. The workers' GRM, which is different from the project GRM, will leverage existing procedures and systems, and will be established in early stages of the project and will serve throughout the project implementation. A workers' GRM will be provided for all project workers, including, direct workers and contracted/supply workers, to raise workplace concerns, including SEA/SH relating to the workplace. The Contractor will maintain a complaint register at the campsite office to document all complaints received from the workers.



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ANNEXURES



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Annexure 1: Curriculum Vitae Of EHS Personnel



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Annexure 2: Environment, Social, Gender, Health and Safety Training Matrix

ENVIRONMENT, SOCIAL, GENDER, HEALTH AND SAFETY TRAINING MATRIX									
S. No.	Topics/Courses Required	To be Attended By			Duration	Schedule	Status		Remarks
		Employees in Management	Skilled Crafts	Labors			Completed	Outstanding	
1.	Initial Orientation	✓	✓	✓	2 hrs	Once upon joining			
2.	Specific Orientation (on job)	✓			2 hrs	On job assignment			
3.	Training to Staff Working within Active Process Area	✓	✓	✓	2 hrs	As & when required			
4.	Daily Tool Box Talk		✓	✓		Daily			
5.	Safety Talks				15 min	Weekly			
6.	Covid-19 SOP	✓	✓	✓	10 min	Daily			
7.	Task-Specific Training Course	✓	✓	✓					
8.	Environmental Issues	2 hours As & when required							
9.	PPEs on Site				2 hour	Weekly			
10.	Driving Rules and Driver's Training	FOR ANY CATEGORY			2 hour	- Do -			
11.	Risk Assessment				1/2 day	- Do -			
12.	Accident/Incident Reporting				1/2 day	- Do -			
13.	Emergency and Evacuation Drills & Exercises				1/2 day	- Do -			
14.	Scaffolding and Ladders				1/2 day	- Do -			



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ENVIRONMENT, SOCIAL, GENDER, HEALTH AND SAFETY TRAINING MATRIX									
S. No.	Topics/Courses Required	To be Attended By			Duration	Schedule	Status		Remarks
		Employees in Management	Skilled Crafts	Labors			Completed	Outstanding	
15.	Fire Fighting				1/2 day	- Do -			
16.	Hazardous Material Handling				1/2 day	- Do -			
17.	First Aid				1/2 day	- Do -			
18.	Working at Heights				1/2 day	- Do -			
19.	Wastes and Spills				3 hours	- Do -			
20.	Air/Water Emissions				3 hours	- Do -			
21.	Grievance Redressal Mechanism		✓		½ hour	As & when required			
22.	Community Mobilization/Consultation		✓	✓	½ hour	Once in month			
23.	Social and Cultural Dynamic		✓	✓	½ hour	Once in month			
24.	Gender Issues		✓	✓	½ hour	Once in month			

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Annexure 3: Daily Check list of Diesel Generator

(Rated _____ KVA)

Dated:

		
Radiator With Cover and Water level	Battery water level and Terminal Covers	Panel With all Meters
		
Engine condition	Earthing	Secondary containment
		
Oil \ Diesel Leakage	Electrical Connection in Proper condition	D B Condition
		
Fire Extinguisher	Emergency Stop Switch	
Remarks:-		
Generator operator Name with Signature:-		



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Annexure 4: Induction Record

HSE Induction Record						
S.No	Date	Name	Designation	CNIC No	Signature	Remarks
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

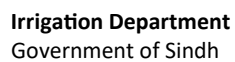


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Annexure 5: Employee Arrival Departure Formats

EMPLOYEE ARRIVAL-DEPARTURE FORM					
<u>Project:</u>			<u>Reference#:</u>		
Name : _____		CNIC# _____			
Designation: _____		Arrival Date: _____		Arrival Time: _____	
Cell#: _____		Departure Date: _____		Departure Time: _____	
S. No#	Items	Issue Date	Employee Signature	Return Date	Store Incharge Signature
1-	Coverall				
2-	Goggles				
3-	Helmet				
4-	Shoes				
6-	Jacket				
7-	Blanket				
8-	First Aid Box				
9-	Fire Extinguisher				
10-	Water Cooler				
11-	Tracker/Logger				
12-	V.H.F				
13-	Reverse Horn				
14-	Seat Belt				
Others If Any					
15-					



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Annexure 6: Employee Arrival Departure Formats

FIRE EXTINGUISHER CHECKLIST

Inspected By

Inspection Date

[illegible]



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Annexure 7: Fire Extinguisher Tag

Fire Extinguisher Type: _____ Fire Extinguisher Weight: _____				
Month	Inspection Date	Inspected By	Signature	Remarks
Jan				
Feb				
Mar				
Apr				
May				
Jun				
Jul				
Aug				
Sep				
Oct				
Nov				
Dec				

Fire Extinguisher Type: _____ Fire Extinguisher Weight: _____				
Month	Inspection Date	Inspected By	Signature	Remarks
Jan				
Feb				
Mar				
Apr				
May				
Jun				
Jul				
Aug				
Sep				
Oct				
Nov				
Dec				

Fire Extinguisher Type: _____ Fire Extinguisher Weight: _____				
Month	Inspection Date	Inspected By	Signature	Remarks
Jan				
Feb				
Mar				
Apr				
May				
Jun				
Jul				
Aug				
Sep				
Oct				
Nov				
Dec				

Fire Extinguisher Type: _____ Fire Extinguisher Weight: _____				
Month	Inspection Date	Inspected By	Signature	Remarks
Jan				
Feb				
Mar				
Apr				
May				
Jun				
Jul				
Aug				
Sep				
Oct				
Nov				
Dec				

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Annexure 8: Vehicle Inspection Checklist

Vehicle:	Driver/Opt:	Date:	
Weekly Inspection Check List			
			
All Lights/ Indicators Are Properly Working	Horn Working Properly	Radiator Water Checked	Hand Brake Working Properly
			
Fire Extinguisher Is Available	No Oil Leakage	Foot Brake Working Properly	Logger Is Available
			
Wheel / Studs & Nuts Are Checked	All Side View/ Rear View Mirrors Are Fixed	Seat Belts Are Properly Fitted	Chock Blocks Are Available
			
Battery Is In Good Condition & Terminals Are Covered.	Tool Kit Is Available	First Aid Box Is Available	Wind Screen / Wipers Checked
Remarks:			
Checked By Name:			
Driver's Signature:			



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Annexure 9: OPD Daily Report

DAILY OPD Report						
Project:		Date:				
S. No	Patient Name	Designation	Diagnoses	Medicines Recommended	Dosage	Remarks
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
Doctor/Medic signature:				HSE Officer Signature:		



Annexure 10: HSE Toolbox Topic

HSE TOOL BOX TOPICS

1. Hearing Protection.
2. Heat Stress .
3. Accident Prevention.
4. Excavation & Trenching Safety.
5. Hand Tool Safety.
6. Hazard Awareness.
7. Heavy Equipment Safety.
8. House Keeping.
9. Manual Handling.
10. Importance of Personal Protective Equipments.
11. Ladder Safety.
12. Work at height Safety.
13. Scaffolding Safety.
14. Sexual harassment / Gender Based Violence / Bullying Hazards
15. Smoking Safety.
16. Role & Responsibilities of Individual towards Hazard.
17. Electrical hazards and its safety.
18. Power tool safety.
19. Concrete Hazards.
20. Steel Fixing Hazards.
21. Slips/Trips/Falls
22. Behavior- Based Safety
23. Lightning Safety
24. First Aid & Medical
25. Fall Protection
26. Carbon Monoxide CO Safety
27. Noise Hazards and its preventive measures.
28. Stress Hazards
29. Heat Stroke
30. Fire Safety
31. Construction Safety



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Annexure 11: Tool Box Talk

Tool Box Talk

Topic		Location	
Conducted by		Signature	
Time started		Time ended	
Date			
S.No.	Name	Designation	Signature
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			



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Annexure 12: Incident / Accident Report Form

Project Title : _____ Project # : _____

Near Miss / Incident:- Title _____ Report No.: _____

Report of Incident – Section I			
Responsible Contractor / Dept. :			
Short Description of Incident:			
Report Prepared By:	Name:	Job Title:	Contact Details:
Responsible Supervisor:	Name:	Job Title:	Contact Details:
Incident Owner:	Name:	Job Title:	Contact Details:
Where did the incident occur?			
Location:			
Specific Location:			
What were the conditions like?			
Weather:			
Lighting:			
Road Surface:			
When did the incident occur?			
Date Occurred:	(day/month/year)	Time:	24 hour
Date Reported:	(day/month/year)	Time:	24 hour
Who or What was involved?			
Employee:	Name:	Job Title:	Contact Details:
Contractor:	Name:	Job Title:	Contact Details:
Witnesses:	Name:	Job Title:	Contact Details:
Vehicle / Equipment Involved:	Description and Number:		

Page 1 of 4

Annexure VIII: Chance find procedure of Important Physical and Cultural Resources

Chance Find Procedure

The "Chance Find Procedure" is a protocol typically associated with environmental and safety regulations, often used in the context of archaeological, cultural, or environmental discoveries during construction or excavation projects. "ESS" often refers to "Environmental and Social Standards" in this context. The general outline of chance find procedure is structured according to environmental and social standards:

Preparation and Awareness:

Training: Ensure that all personnel involved in excavation or construction are trained to recognize and report potential finds, such as archaeological artifacts, fossils, or other culturally significant items.

Documentation: Prepare and distribute written guidelines on what constitutes a "chance find" and the appropriate procedures for reporting and handling these finds.

Identification:

Recognize Finds: Train staff to identify potential chance finds. This might include unusual artifacts, structures, or other items of interest.

Initial Assessment: Have procedures in place for an initial assessment of the find to determine its significance.

Reporting:

Immediate Notification: Establish a clear protocol for reporting the find to the relevant authorities or experts, such as archaeologists, cultural heritage experts, or environmental agencies.

Documentation: Document the find thoroughly, including its location, context, and any preliminary observations.

Protection:

Site Securing: Implement measures to protect the find and the surrounding area. This may include halting work in the immediate vicinity to prevent further disturbance.

Site Preservation: Ensure that the find is preserved in its original context as much as possible until experts can assess it.

Assessment and Evaluation:

Expert Evaluation: Engage with relevant experts to assess the significance of the find and determine the necessary steps for further investigation or preservation.

Impact Assessment: Evaluate any potential impacts on the project schedule and budget, and determine the implications for the overall project.



Reporting and Documentation:

Detailed Report: Prepare a detailed report on the find, including its significance, any actions taken, and recommendations for future steps.

Compliance Reporting: Ensure compliance with any legal or regulatory reporting requirements related to the find.

Resolution and Follow-up:

Mitigation Measures: Implement any required mitigation measures based on the expert assessment and recommendations.

Project Resumption: Once the find has been addressed, coordinate with all stakeholders to resume project activities as per the revised plan.

Communication:

Stakeholder Communication: Keep relevant stakeholders, including local communities and authorities, informed about the find and the steps being taken.

Public Information: If appropriate, provide information to the public about significant finds, ensuring transparency and fostering community engagement.

Annexure IX: Dam Break inundation extent of Mazarani Dam

MAZARANI DAM BREAK INUNDATION EXTENT

