SINDH FLOOD EMERGENCY REHABILITATION P&DD

GOVERNMENT OF SINDH

ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN (ESMP)

FOR

Rehabilitation of Rain/Flood Affected Roads, District Jamshoro





Sindh Flood Emergency Rehabilitation Project (SFERP)

PROJECT IMPLEMENTATION UNIT
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This document and its contents have been prepared and intended solely for the information and use of the Government of Sindh, Project Implementation Unit (PIU) concerning the **SINDH FLOOD EMERGENCY REHABILITATION PROJECT (SFERP)**

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LIST OF ABBREVIATION

BOQ	Bill of Quantity
CC	Construction Contractor
CoI	Corridor of Impacts
CSC	Construction Supervisory Consultant
DC	Deputy Commissioner
EC	Electrical Conductivity
ECA	Employment of Child Act
EIA	Environmental Impacts Assessment
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
ESS	Environmental and Social Standrads
FGDs	Focus Group Discussions
GFP	Grievance Focal Point
GoS	Government of Sindh
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
IBIS	Indus Basin Irrigation System
IEE	Initial Environmental Examination
IPF	Investment Project Financing
IUCN	International Union for Conservation of Nature
NGO	Non-Governmental Organization
OP	Operational Policy
P&DD	Planning and Development Department
PAP	Project Affected Person
PCC	Public Complaint Centre
PC-I	Pakistan Planning Commission Form – 1 Appraisal of Development Project
PD	Project Director
PDMA	Provincial Disaster Management Authority
PEPC	Pakistan Environmental Protection Council
PID	Project Information Document
PIU	Project Implementation Unit
PKR	Pakistani Rupee
POPs	Persistent Organic Pollutants
SEPA	Sindh Environmental Protection Agency
SEQS	Sindh Environmental Quality Standards
SFERP	Sindh Flood Emergency Rehabilitation Project
WB	World Bank
WHO	World Health Organization

1. EXECUTIVE SUMMARY

The monsoon season of 2022 brought heavy rains coupled with a high river flood in the province. Rainfall in various districts was recorded up to 900 mm. The River Indus raised to above 0.6 Million cusecs due to heavy downpours in its catchment coupled with local rains. The high flood at Kotri Barrage persisted due to hill horrent emanating from Kirthar Mountains. The two month's rains and River Indus Flood caused heavy losses to human life, livestock, crops, houses, private buildings, Industries, and Public Infrastructures like Roads, Irrigation; river protective embankments (Bunds) and Drainage networks, and Railways.

The proposed project (Sindh Flood Emergency Rehabilitation Project – SFERP) will Restore/Rehabilitate Rural (Farm to Market) Roads in affected districts, talukas and UCs of rains & flood-affected areas. Raising the profile, adequacy of cross-drainage structures, provision of protection works (Riprap[1]), increase in the number of culverts and provision of side drains all are the factors considered to address climate and/ or flood resilience design. The improvement in Pavement Structural numbers is an additional benefit.

The present ESMP represents the environmental impacts and mitigations of Component- 1: Infrastructure Rehabilitation, Sub-component 1.2: Restoration of Roads and Allied Infrastructure in Jamshoro District, and has the following sub-components:

The Rehabilitation of 16 roads in different areas of district Jamshoro. Administratively, most rehabilitation works fall in Sehwan Taluka.

According to Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021, the sub-project falls under category schedule II – F. Transport 3. Rehabilitation or rebuilding or reconstruction of existing roads more than one kilometer in urban areas and more than 5 km from rural areas" (only 04 road is more than 5 km). Hence IEE will need to be prepared as per Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021.

Rehabilitation/restoration works are limited to the existing Right of Way (RoW) hence, the proposed project will have some minor adverse environmental impacts that are reversible and site-specific with short duration. Therefore this sub-project falls under the moderate category under the draft ESMF of the SFERP. Environment and Social Management Plan (ESMP) has been prepared as per screening criteria provided in the ESMP for the subprojects with moderate environment and social risks.s.

Furthermore, the sub-project screening was performed through the checklist covering environmental and social issues. Surveys were conducted to fill individual checklists and a summary of environmental and social concerns noted during surveys. The proposed Project of road rehabilitation works is within defined. RoW Major construction works will remain

[1] Riprap (in North American English), also known as rip rap, rip-rap, shot rock, rock armour (in British English) or rubble, is human-placed rock or other material used to protect structures against scour and water.

confined within the RoW. No public infrastructure or commercial activities exist within RoW. While the indirect impacts have been evaluated at 200 meters/650 ft buffer zone of the proposed roads (100 meters/328 ft on each side from the center line). Trees will not be uprooted or need relocation due to rehabilitation works because the existing RoW will be used for the proposed rehabilitation works. No archaeological site was observed near (within 500 meters) the sub-project areas and no physical cultural resources at or near the proposed sub-project sites are observed which may likely be affected by construction activities. No graveyard is situated within the construction area. A number of the settlements were observed near the proposed rehabilitation works outside the RoW. During the construction phase, a few socially sensitive receptors like mosques, schools, basic health unit graveyards, etc. might be indirectly impacted but this impact is temporary and reversible having a short duration with low significance (by adopting the mitigation measures). No protected forests were observed near the proposed sub-project area. As far as the sub-project area is concerned, none of the endemic or endangered species of both flora and fauna were recorded from sub-project sites.

The proposed sub-project areas lie in eastern Sindh, District Jamshoro. The sub-project area is falling in Zone 2A, with peak ground acceleration (PGA) varying from 0.08 to 0.16 (Pakistan Building Code of Pakistan, 2007).

Vehicular traffic on dirt roads causes some dust emissions and noise pollution whose effect is fairly localized. The main pollutants emitted by vehicle exhaust pipes are particulate matter, carbon monoxide, sulfur dioxide, and nitrogen oxides. These emissions generally affect the air quality in the vicinity of the roads. However, traffic on the roads in the proposed project intervention's area is low compared to the national highways or other major roads. The surface & ground water, ambient air and noise testing will be done before the start of the construction by the contractor through a SEPA-approved lab with the consent of the Construction Supervisory Consultant (CSC).

The sub-project area falls in a rural locality and has a limited diverse habitat, which supports a few varieties of faunal and floral species. As the population has increased in the sub-project area, wildlife abundance and diversity have decreased. Among the small mammal species still found are Red foxes and rats are reported to have resided in the surrounding sub-project area. Snakes and lizards also inhabit. The black rat (*Rattus rattus*), is a common long-tailed rodent. Among the birds, Eagle (*Aquila rapax*), Hawk (*Accipiter badius*), Kite (*Milvus migrans*), Parrot (*Psittacula krameri*), Partridge, Common crow (*Corvus splendens*) and several varieties of waterfowls are reported. The natural vegetation has long ago been replaced by crops. At present, there is generally a mixture of species found. The area has been used for agricultural purposes for almost a decade; the natural flora has been completely replaced by cultivated species. The dominant floral species include *Acacia modesta*, *Acacia nilotica*, *Dalbergia sissoo*, *Ziziphus nummularia* and plantations of *Eucalyptus globulus* and Populs.

No acquisition of private land is required for this sub-project. In addition, no demolition of structures will be involved and no one will be required to resettle as sub-project areas are lying in the less populated areas and the population is scattered. None of the informal settlers/squatters exist in RoW as well as no livelihood disruption has been envisaged. The rehabilitation work is done on the existing platform/right of way. No additional land is needed Indirect impacts, caused by noise, dust emissions, campsites and borrow sites could be beyond the RoW. Socio-environmental impacts may arise due to the influx of external

workforce, unattended residual wastes, and occupational health and safety issues for laborers and the community, therefore ESMP has been prepared. Existing tracks will be used for the transportation of the material. The negative impact could only be anticipated during the construction phase, which will last for this very small period only. However, mitigation measures recommended in the report would need to be strictly ensured by the contractor during the construction period.

Anticipated negative impacts can be mitigated through proper inspection and maintenance of vehicles and machinery to reduce exhaust emissions, using noise suppressors or mufflers for heavy equipment & watering unpaved roads. Control of adverse impacts from construction debris/ residual wastes by proper handling, and immediate removal. Control of water pollution through proper storage and handling of oil wastes and treatment of wastewater at the active construction site. Control of solid waste through sanitary storage and frequent collection for sanitary disposal.

Occupational health and safety will be ensured through continuous inspection to prevent disease and accidents, awareness raising among labor and community, sanitation measures, COVID-19 management & Monitoring and emergency response and rescue procedures, provision of adequate sanitary facilities, potable water, and garbage bins for workers.

E&S monitoring will be carried out as per the Environment and Social Framework ESF 2018 of the World Bank, SEPA act 2014, ESMF of SFERP, Labour Management Procedures prepared for SFERP & Stakeholder Engagement Plan (SEP) to ensure that the mitigation plans are regularly and effectively implemented. It will be carried out at three levels. At the PIU level, the environment and social specialists will carry out safeguard monitoring to ensure that the mitigation plans are being effectively implemented and will conduct field visits regularly. At the field level, the relevant staff of the CSC will carry out more frequent safeguard monitoring. At the third level, Contractor's E & S team will implement and produce monthly, quarterly and bi-annual reports.

The overall responsibility for implementing the SFERP project as well as the present ESMP rests with the PIU, headed by the Project Director. The PIU is supported by the Environmental and Social team. PIU has also engaged CSC, responsible for construction supervision. Appropriate clauses will be included in the construction contracts for this purpose.

A separate budget of Rs 7,094,000/- has been allocated for the implementation of the ESMP including the GRM running & General Community support needs. This has been incorporated as a provisional sum item in the ESMP bill and Bill of Quantities (BOQs). The implementation of the ESMP involves inputs from Construction Contractor (CC), CSC and PIU. The CC will be primarily responsible for ensuring the implementation of mitigation measures proposed in the ESMP, which will be part of the contract documents. Hence, the provision of environmental mitigation costs as a separate head in BOQs will be made mandatory in contract documents.

However, if the CC fails to comply with the implementation of ESMP and reporting properly, the proponent will enforce compliance with the terms of the contract, including adherence to the ESMP and WB ESF 2018. For the smooth execution of ESMP implementation activities, it has been recommended that all the bills/payments related to ESMP implementation will be approved/authenticated by the CSC. ESMP implementation cost will be deducted from Interim Payment Certificates (IPC) until compliance has been done.

2. INTRODUCTION

Following the Flood 2022 emergency, the Federal Government of Pakistan requested the global community and development partners for assistance to respond to the flood disaster. Subsequently, the World Bank (WB) task team visited Sindh province and had a series of meetings with the provincial Govt. During the discussions held with the WB Mission, a two-pronged strategy was agreed i.e.

- Restoration/Rehabilitation of Rural (Farm to Market) Roads in affected districts, talukas and UCs.
- Restoration of water supply, drainage and sanitation schemes in affected districts, Talukas and Union Councils.
- To provide immediate financial assistance, cash for work is proposed to rehabilitate small community structures like rural roads, watersheds, watercourse (s) to carry irrigation water to Farm(s), Rehabilitation of village streets and restoration of village sanitation work including removal of stagnant water in villages. The exact number to be arrived at after assessment.
- The Rain/River Flood 2022 witnessed a serious shortage of Emergency Rescue arrangements. The proposal is to expand the Emergency Rescue Service (Sindh Emergency Rescue Services-1122) to the remaining districts. The Provincial Government has already launched Sindh Emergency Rescue 1122 in Six District HQs – Karachi, Hyderabad, Mirpurkhas, Shaheed Benazirabad, Sukkur, and Larkana. The ongoing/scheme will remain in implementation as per the existing arrangement, in case of the present scenario if its revision is required that must be undertaken.

2.1 Project Components

The proposed Sindh Flood Emergency Rehabilitation Project – SFERP falls into three main components.

i. Component-I. Infrastructure Rehabilitation:
ii. Component-2 Livelihoods Restoration
iii. Institutional Strengthening for Resilience and Technical Assistance
iv. Component–3 Project Management.

2.2 The Proposed Sub–Project

The proposed project under Flood 2022 Emergency Response is a sub-component that will support the rehabilitation and reconstruction of the flood-affected road network to improve accessibility to public facilities and facilitate the socio-economic revival of the worst-affected areas of the province:

Under the Flood 2022 Emergency Response following roads were identified for immediate rehabilitation Location map is given in Figure 1.

Table 1: List of Districts for Rehabilitation under SFERP

Sr. No	Description	No. of Roads
1	Rehabilitation of different roads in District Hyderabad	3
2	Rehabilitation of different roads in District Matiari	3
3	Rehabilitation of different roads in District Tando Allah Yar	3
4	Rehabilitation of different roads in District Shaheed Benazirabad	12
5	Rehabilitation of different roads in District Naushahro Feroze	14
6	Rehabilitation of different roads in District Thatta	16
7	Rehabilitation of different roads in District Sujawal	4
8	Rehabilitation of different roads in District Badin	3
9	Rehabilitation of different roads in District Dadu	6
10	Rehabilitation of different roads in District Jamshoro	16
11	Rehabilitation of different roads in District Tharparkar	2
12	Rehabilitation of different roads in District Mirpurkhas	3
13	Rehabilitation of different roads in District Umerkot	5
14	Rehabilitation of different roads in District Sanghar	8
15	Rehabilitation of different roads in District Sukkur	8
16	Rehabilitation of different roads in District Khairpur	19
17	Rehabilitation of different roads in District Larkana	13
18	Rehabilitation of different roads in District Kamber-Shahdadkot	14
19	Rehabilitation of different roads in District Shikarpur	4
	Total	**156**

Sub–Project/Sub-Component, Restoration of Roads and Allied Infrastructure

The present ESMP represents the environmental impacts and mitigations of Component- 1: Infrastructure Rehabilitation, Sub-component 1.2: Restoration of Roads and Allied Infrastructure which has the following sub-components of the project include:

The Rehabilitation of 16 roads in different areas of district Jamshoro. Administratively, most rehabilitation works fall in Sehwan Taluka. The location map of the subcomponent is given in Figure - 2.

2.3 Objective of ESMP

The primary objectives of the ESMP are as follows:

- Identify the social and environmental impacts of the sub-component and related activities.
- Suggest suitable mitigation measures for identified impacts at the planning, designing, and implementation stage of the sub-projects and eliminate or reduce their adverse impacts if any.
- Propose environmental monitoring program to ensure that mitigation measures are implemented during the subprojects execution and timely corrective actions are taken where required, and

  Propose the institutional arrangements required to implement and monitor the EMP...

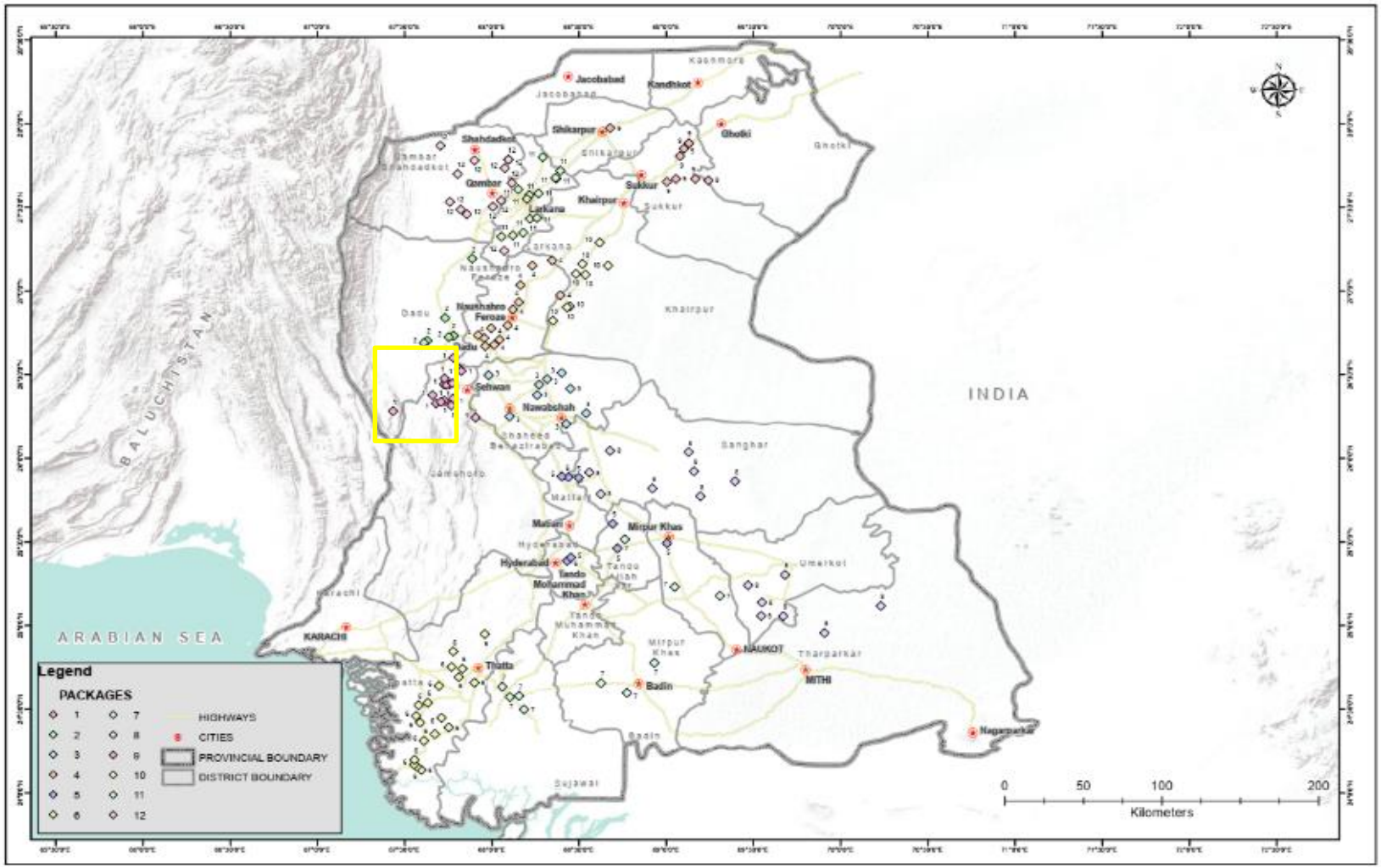

Figure 1: Location Plan for Rehabilitation Roads-SFERP

According to Sindh – EPA: According to Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021, the sub-project falls under category schedule II – F. Transport 3. Rehabilitation or rebuilding or reconstruction of existing roads more than one kilometer in urban areas and more than 5 km from rural areas" (only 04 road is more than 5 km). Hence IEE will need to be prepared as per Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021.

According to Donor Agency (World Bank): Rehabilitation/restoration works are limited to the existing RoW hence the proposed project will have some minor adverse environmental impacts that are reversible and site-specific with short duration. Therefore, this sub-project falls under the moderate risk category under the draft ESMF of the SFERP. The present ESMP has been prepared accordingly to meet the moderate risk sub-project requirements.

2.4 Sub-project Screening Procedure

The sub-projects screening was performed through the checklist covering environmental and social issues. Surveys were conducted to fill individual checklists (Annexure – I) and a summary of environmental and social concerns noted during surveys is given below.

- No tree will be uprooted or need relocation due to rehabilitation works because the existing ROW will be used for the proposed construction.
  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.
- The number of the settlement was observed near the proposed rehabilitation works. None of the infrastructure and commercial activities exist within RoW. Indirect impacts, caused by noise, dust emissions, campsites and borrow sites could be beyond the RoW. During the construction phase, a few Socially sensitive receptors like mosques, schools, basic health unit graveyards, etc. might be indirectly impacted but this impact is temporary and reversible having a short duration with low significance (by adopting the mitigation measures). No resettlement is expected due to the rehabilitation of the proposed project's sub-component.
- No protected forests were observed near the proposed sub-project area.
- The contractor will conduct the baseline environmental monitoring before the start of the civil work with the consent of the Construction Supervisory Consultant (CSC) Environmental Specialist after approval of PIU.

2.5 Project Corridor

The sub-project corridor is delineated according to two criteria: the Right of Way (RoW); which the Works and Services Department, Government of Sindh is legally entitled to, and the Corridor of Impact (CoI), i.e. the width of the corridor that will be impacted, directly or indirectly, by the proposed Project during the construction and operational phases.

2.5.1 Right of Way (RoW)

The proposed sub-project corridor will have a well-defined RoW that will be the existing width of the roads (which is a minimum of 12 to a maximum of 24 ft as depicted in Table-2) as the proposed sub-project is rehabilitation or restoration. Major construction works will generally

remain confined within the RoW. None of the public infrastructures and commercial activities exist within RoW.

2.5.2 Corridor of Impact (CoI)

The Corridor of Impact (CoI) was delineated as the area/extension in which the sub-project has a direct or indirect impact. Direct impacts of the Project are the relocation of houses, trees, private land, utilities and air & noise pollution impact on workers during construction. All direct impacts are constrained within the RoW. Indirect impacts, caused by noise, dust emissions, campsites and borrow sites could be beyond the RoW. The direct CoI of the surface water bodies will be confined within the RoW of the proposed sub-project and will be temporary only for the construction period.

For the proposed rehabilitation/restoration project no impacts have been envisaged on the relocation of houses, trees, private land, and utilities. The work is done on the existing platform/right of way. No additional land is needed.

While the indirect impacts have been evaluated at 200 meters/650 ft buffer zone of the proposed roads (100 meters/328 ft on each side from the center line).

3. DESCRIPTION OF SUB-PROJECTS

3.1 Locations of Sub-Project

The proposed sub-project falls in the District Jamshoro. The proposed project is aimed at the reconstruction/rehabilitation of the following 16 No. of roads of district Jamshoro, damaged by the flood with the objective to restore the road connectivity and restoration of Livelihood resources of flood-affected communities.

3.2 Main Activities for Rehabilitation Works

The proposed activities will be confined to the existing road RoW. For this ESMP, potential impacts were considered within a corridor extending some 10 meters on either side of the road center line. Both rehabilitation and reconstruction within the existing carriageway are category B works.

The main activities for the rehabilitation works include as follow:

- Asphalt wearing course shall pertain to “Class-B” gradation as specified in the NHA General Specification of 1998.
- The asphalt concrete wearing layer shall be designed with air voids in the range of 3% to 5%. Air voids greater than this range will result in increased permeability/porosity of the mix.
- For rehabilitation of the existing carriageway, care shall be taken not to scarify/excavate the underlying exposed granular material.
- The Maximum Dry Density (MDD) of Water Bound Macadam layer shall be 100%. In the section where the sub-base is provided its density shall be 98% of MDD. WBM and Subbase shall pertain to gradation as specified in NHA General Specifications.
- Cross fall of 2% shall be maintained at Subbase formation, in case of new construction and at base course formation in case of existing carriageway.
- On both sides of the culverts backfilling should be done with Granular Backfill material over which required layers are to be laid. The compacting will be done with the plate compactor.
- Effective Drainage of the road shall be ensured through the proper cross slope of the pavement.
- The material for the Formation of Embankment shall pertain to AASHTO Class A-1-a, A-1-b, A-2-4, with Maximum Dry Density (MDD), CBR and Compaction as per NHA General Specifications:
- Zebra crossing and traffic calming measures including additional signage, marking and rumble strips with raised walkways and speed restrictions shall be given near socially sensitive receptors areas.
- Restoration of the campsite and Contractor’s demobilization.
- Typical cross sections for roads, culverts and causeways are given in Annexure – II.

3.3 Climate Resilient Measures

Raising the profile, adequacy of cross-drainage structures, provision of protection works (Riprap), increase in the number of culverts and provision of side drains all are the factors

considered to address climate and/ or flood resilience design. The improvement in Pavement Structural numbers is an additional benefit.

- The design economizes with respect to field condition surveys and the type of roads. The side drain is provided.
- Daylighting of Aggregate Base and/ or sub-base is considered for all types of roads while 0.5 m rounding is also taken for proper daylighting.
- Raising the existing profile with the formation of the embankment is taken to make the design flood resilient.
- The damaged culverts are rectified or replaced while a sufficient number of culverts are provided for proper cross-drainage.
- Vented causeways will also be provided in detailed Design, while their plan cross-sections will also be part of detailed design drawings.
- The flow from culverts and road drainage will be ensured.

Table 2: Details of Roads for Rehabilitation at District Jamshoro

S# No	Name of Road	Location / Taluka	Existing Width (ft)	Length (in Kms)	GPS Coordinates
1	Rehabilitation of road from Jaheja Khanbroth road to Rasool Bux Rodnani and village Muhammad essa Rodnani and Haji Kareem Bux Rodnani	Sehwan	12	3	26°26'38.55"N 67°43'30.44"E 26°26'33.32"N 67°43'30.13"E
2	Rehabilitation of road from Sehwan Airport road to Bubak	Sehwan/Bubak	16	3	26.282732 67.432906 26.27208 67.422199
3	Rehabilitation of the road from Pir Chattan to Bubak Jaheja Khmbroth road via Dhingano Balal	Sehwan	12	4	26°26'30.54"N 67°45'25.98"E 26°26'21.83"N 67°45'26.37"E
4	Rehabilitation of road from Jhangara Chhinni road to village Kot Barocho via Tahani	Sehwan	12	9.6	26°19'42.55"N 67°40'49.82"E 26°22'41.99"N 67°39'34.99"E
5	Rehabilitation of road from Pre-stressed Bridge at LS Bund to Village Bilawalpur	Sehwan	12	3	26°32'1.13"N 67°48'51.31"E 26°33'4.43"N 67°49'28.19"E
6	Rehabilitation of the road from Kot Barocho to Shaikh Dhaman	Sehwan	12	5	26°22'42.19"N 67°39'34.78"E 26°23'22.07"N 67°38'4.36"E
7	Rehabilitation of road from Jhangara Byepass road	Sehwan	18	3	26°20'41.64"N 67°43'34.42"E 26°20'3.46"N 67°43'33.36"E
8	Rehabilitation of road from Sehwan Jhangara road to village Akri	Sehwan	12	3	26°21'25.74"N 67°46'35.10"E 26°20'38.72"N 67°46'11.96"E
9	Rehabilitation of road from Chingiani to Rajab Shakhani	Sehwan	12	4	26°18'54.17"N 67°46'1.16"E 26°18'47.49"N 67°46'29.52"E
10	Rehabilitation of road from Jaheja Khanbroth to Village Bilhan	Sehwan	12	3.22	26°26'21.29"N 67°44'17.44"E 26°25'21.55"N 67°45'1.91"E
11	Rehabilitation of road from Jhangara to Naing Sharif via Kai (18' Wide) i/c 1300Rft High-Level Causeway	Sehwan	18	20	26°20'10.55"N 67°42'27.01"E 26°19'39.01"N 67°40'28.90"E 26°17'41.06"N 67°32'2.07"E
12	Rehabilitation of road from I.H.Way Yaqoob Panhwar Old Alignment	Majhand	18	6.2	26°14'36.39"N 67°54'19.27"E 26°13'57.80"N 67°55'39.41"E
13	Rehabilitation of road from Bubak Shah Bukhari to Village Sawan Laghari	Sehwan	12	3	26°31'17.28"N 67°49'28.62"E 26°30'41.95"N 67°49'34.25"E
14	Rehabilitation of road from Ghulam Nabi Chutto to village Hadi bux chutto	Sehwan	12	3.2	26°26'56.15"N 67°46'25.06"E 26°26'50.44"N 67°47'41.21"E
15	Rehabilitation of road from Indus Highway to Sehwan Airport dual carriageway	Sehwan	24	3	26°28'38.06"N 67°43'40.97"E 26°28'47.59"N 67°43'30.12"E
16	Rehabilitation of road from Sukhya Mori to Ameerpir Mori via Bundhan Babrio links to Qadir Bux Chanwan Roshan Chawan Wadero Qaim Panhwar, Ali Muhammad Bughio (12' Wide)	Sehwan	12	8	26°35'59.98"N 67°46'45.79"E 26°35'58.55"N 67°47'48.33"E

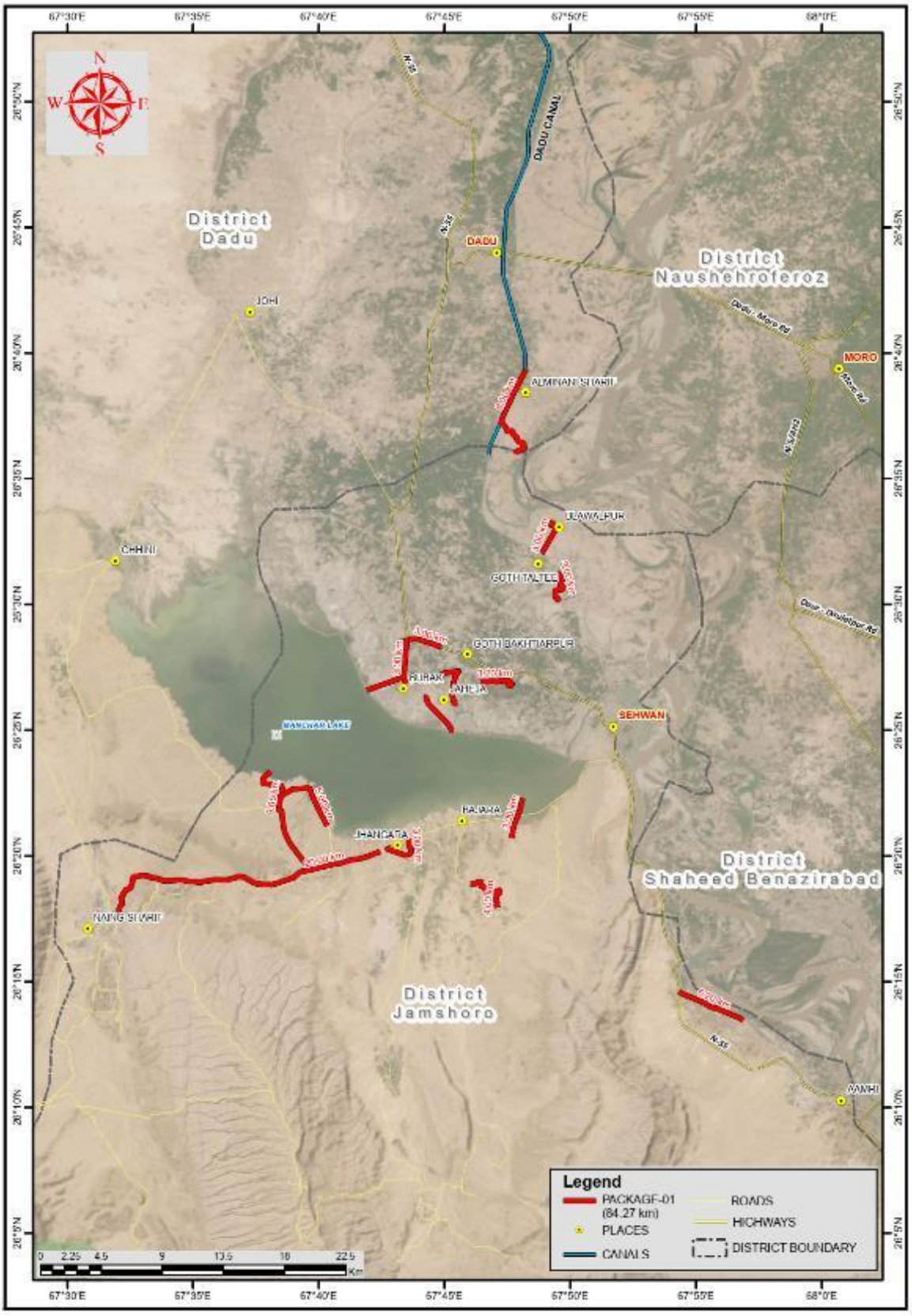

Figure 2: Location Map of Sub-Project – Jamshoro 16 Roads

3.4 Construction Material

The following construction materials are foreseen to be used in the rehabilitation works includes:

a) Embankment fill
b) Granular Subbase
c) Cement
d) Fine and coarse aggregates
e) Asphalt Concrete for Wearing
f) Course
g) Steel Reinforcement

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 from the relevant department of the Sindh Government (Mines and Mineral Development Department & SEPA) and this should be part of the contract agreement with the contractor. Existing tracks will be used for the transportation of the material, and it is capable of the transportation of material.

The proposed project roads cross several watercourses and minor and major canals. The Contractor will be able to use canal water for general construction purposes with the permission of the Irrigation Department and Sindh Irrigation and Drainage Authority. The water would also be obtained from tube wells installed by the Contractors. The contractor shall be strictly bound not to use the community tube well. The contractor will dig a tube well or use canal water. The contractor will conduct an Electrical resistivity-surveying test along with a pump-out test to assess the groundwater potential required for the construction activities before the tube wellbore. This condition will be included in the bid document as contractual binding.

3.4.1 Reuse/Recycling of scarified material from the road surface.

The material from the scarification removal of the existing road surface is judged by the material engineer as being not suitable for use on the project roads due to its poor quality and the small quantities involved which makes recycling uneconomic. This leaves the following options.

Option 1: Waste material that meets the required specifications will be used as fill when constructing or repairing the shoulders.

Option 2: Waste material can be used to refill borrow pits and covered with topsoil.

Option 3: Scarification materials can be spread on earthen link roads, and compacted with rollers, improving the road surface as well as reducing road dust.

3.5 Contractor's Camps

For the construction of the sub-project, camps will be established on the government land near the subproject area a minimum of 500 m away from settlements. The contractor will prepare workers' code of conduct plans and Camp layout plans and get them approved by the Resident Engineer and PIU. The camp will be established after the approval of the layout plan.

3.6 Manpower Requirement

The manpower required by the contractor during the execution of the sub-projects will be determined by the contractor and will be depicted in the Site Specific EMP, which needs to be approved by the CSC.

During surveys & consultations, the major demand of the community was the provision of jobs during the construction phase. Moreover, it would be safe to say that sufficient labor particularly unskilled is available in the sub-project area.

The contractor will be bound through the contractor's code of conduct and contractual obligations to provide jobs to local people for unskilled labor from the communities and this should be 100% if not available in the sub-project area then may hire from outside. Local operators/drivers will be preferred with valid driving licenses having experience driving vehicles like (trucks, dumpers, and Dozers, etc.). This does not include the drivers, which will carry the stone from the quarry and other items like cement and steel from the local market of this process would be initiated with the consultation of elders of different communities in an equitable manner hence there would be no need of setting up a large-scale camp.

3.7 Borrow Material

The fill for the earthwork/embankment can be obtained from borrow areas where suitable soil is available. The Contractors will identify borrow areas as per their arrangement and get approval from PIU. The contractor will be bound to procure the material from authorized quarries. Before the start of the work, the contractor will get approval.

3.8 Machinery & Equipment

The construction work includes mainly earthworks. These works will require earth-moving types of machinery such as excavators, dumpers, graders and rollers, transit mixtures, etc. The concrete works will involve a medium-sized batching plant and concrete placing equipment. The contractors will directly manage all equipment. The actual number of equipment required on the site will be determined by the contractor to carry out the work.

3.9 Construction Time

The execution works of the sub-project are proposed to be completed in the stipulated time (PIU determined to ensure project completion in 1 year) after the approval of PC-1 and the bidding process according to the procurement plan approved by the World Bank.

4. ENVIRONMENTAL & SOCIAL IMPACTS AND MITIGATIONS

4.1 Introduction

This section describes the existing environmental and socio-economic conditions of the sub-project area. The environmental and social baseline aims to provide a baseline against which the project impacts can be measured. Due to the emergency nature of work, the details have pertained to the important areas according to the rehabilitation works. This Section also identifies Socially sensitive receptors along the RoW of the proposed roads.

4.2 Physical Environment

4.2.1 Geography

The proposed sub-project areas lie in Western Sindh, Tehsil Sehwan of District Jamshoro, between the Western hills of Kirthar range and the right bank Command area of Sukkur barrage. The rim of the cup-shaped mountainous range around Manchhar Lake forms the upper or Northern part where the Nais water enters the Lake. The South - Eastern part lies on the other side of South Eastern loop which extends up to the river Indus. The Nais of the Northern side after flowing in the North direction discharges surplus water into the Manchhar Lake.

4.2.2 Soils

According to a reconnaissance soil survey carried out by Soil Survey of Pakistan, generally, the area likely to be occupied by the proposed sub-project comprises the hilly sandy soil of the Aeolian desert. The soils in the plain near the subproject sites have a homogenous porous structure, mainly silt and fine silt clayey, strongly calcareous with 18-20 % lime content uniformly distributed in the profile. Small patches contain shallow or very shallow, strongly calcareous, gravel and stony loams.

4.2.3 Seismicity

The map shown in Figure – 4 indicates that all of the sub-project areas are falling in Zone 2A, with peak ground acceleration (PGA) varying from 0.08 to 0.16 (Pakistan Building Code of Pakistan, 2007). While no site is falling in Zone 4 which is called the High Damage Risk Zone and covers areas liable to MSKVIII. Moreover, all structure designs will be reviewed by the World Bank expert**.**

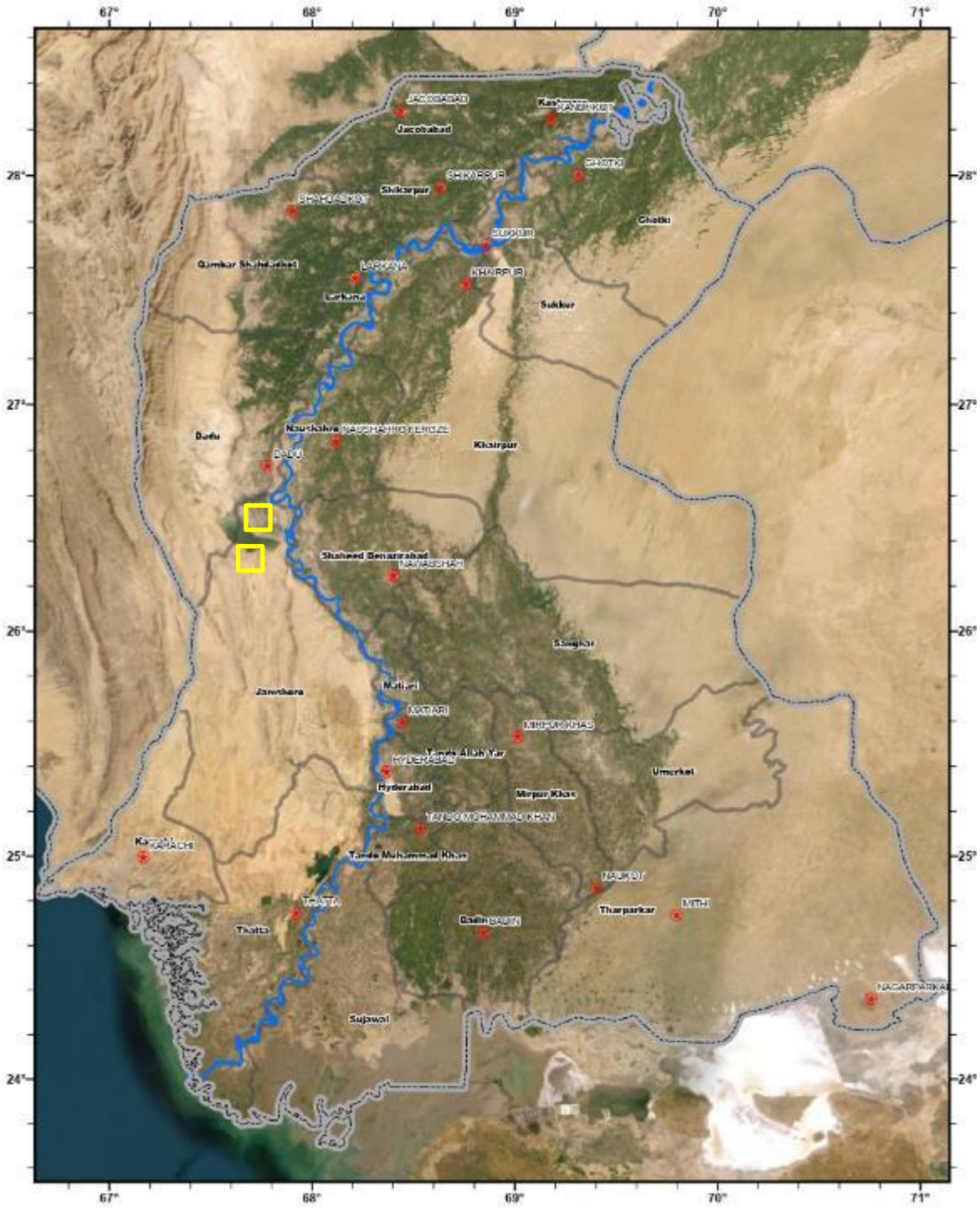

Figure 3: Geographic Map of Sub Project Area

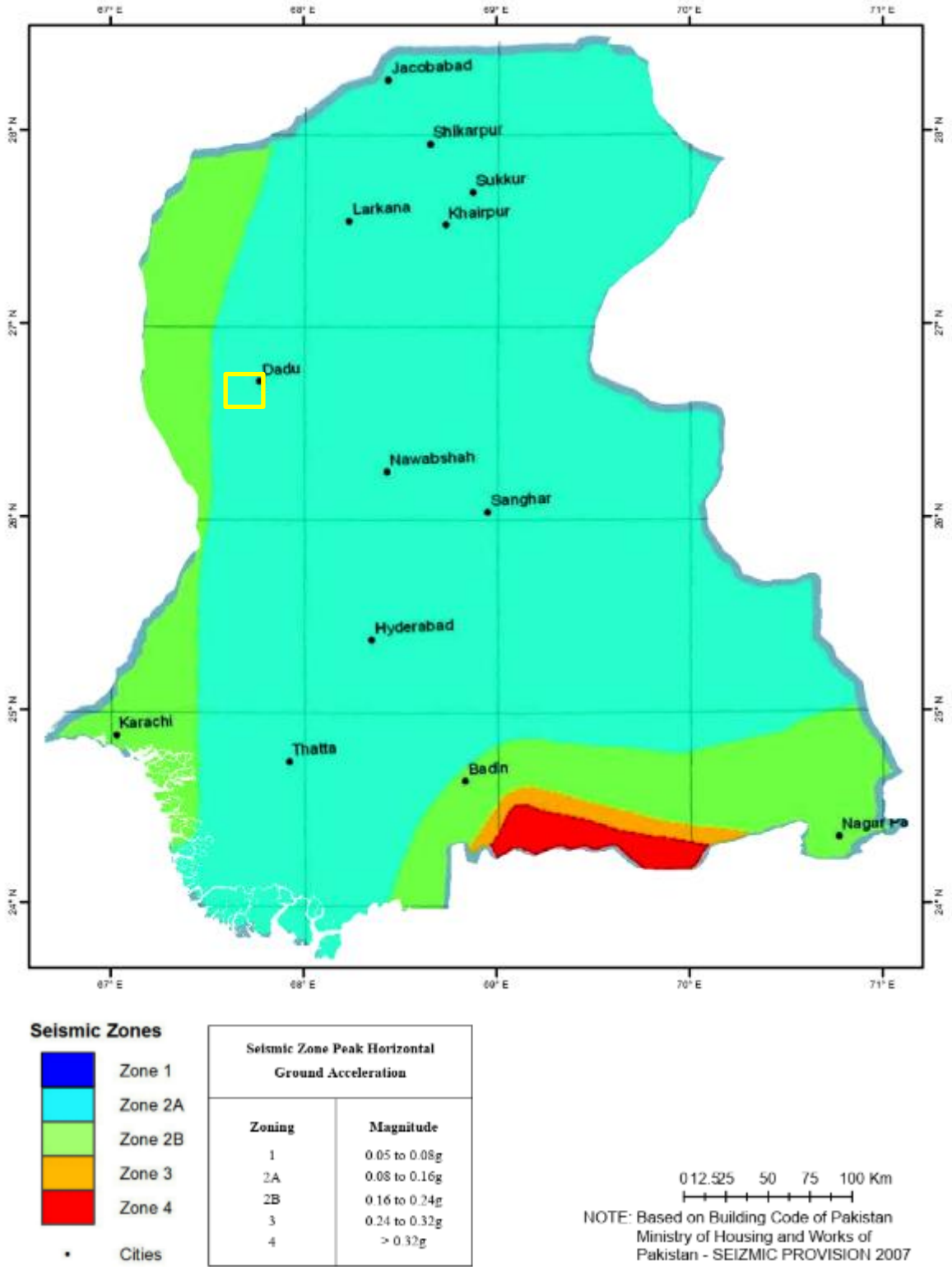

Figure 4: Sezimic Zone Map of the Project Aera

4.2.4 Climate

The project generally falls in an arid zone with its climate as subtropical continental characterized by hot summer and mild winter. May and June are the hottest months with an average temperature of 37ºC, the highest rising to 45ºC at noon. January is the coldest month with a mean minimum temperature of 17ºC. It is characterized by large diurnal and seasonal fluctuations of temperature, a dry season for the greater part of the year and a meager amount of annual rainfall, the mean annual ranging between 5 and 7 inches, of which nearly 75 percent falls during the monsoon season from mid-June to mid-September. Humidity is at its lowest during winter and higher during the monsoon months, but never exceeding 70 percent.

4.2.5 Rainfall

The last summer monsoon of 2022 with extraordinary torrential rains and subsequent occurrence of the flood left unprecedented damage to road infrastructures. One of the principal benefits of surface drainage in the Study Area is the timely removal of excess storm water from cropped areas. Rainfall in the Study Area is sporadic and unreliable. However, most rain falls in July to September and at this time large storms can occur, where daily rainfall may exceed the annual average as happened in 2022. District Meteorological Station is located within the catchment area, with precipitation data available from 1968 to 2011. Table 3 shows the 24-hour yearly maximum rainfall for Jamshoro.

Table 3: Rainfall (mm) and Temperature (°C)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall	22	28	31.6	39	41.9	43.3	39	55	36.8	33.9	30.4	23
Maximum Temp	9	11	19	15	26	30	26	19	27	22	14	10
Minimum Temp	4	8	4	3	3	5	22	16	3	1	1	4
Source: District Profile of Jamshoro												

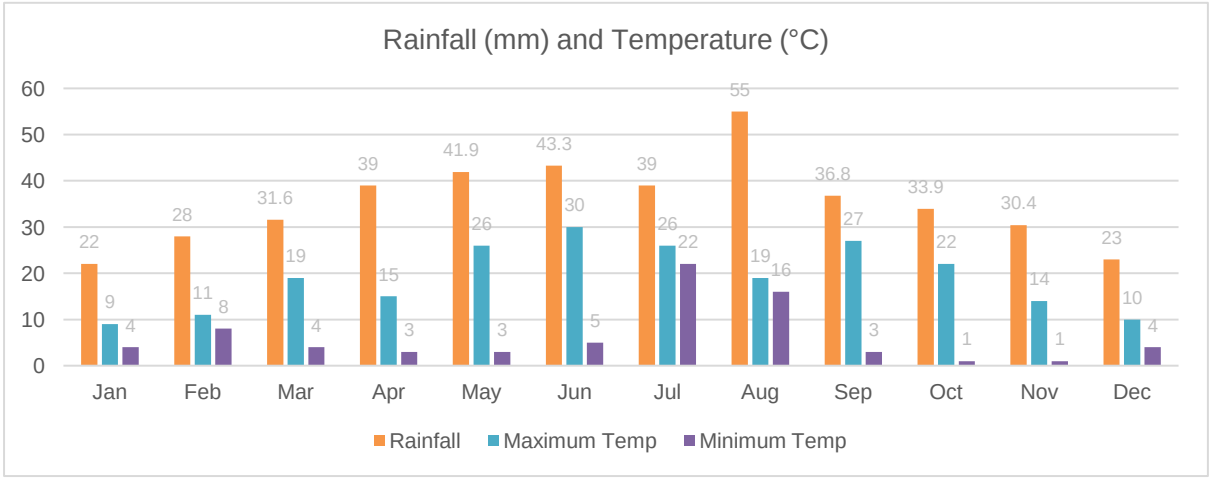

Figure 5: Mean Monthly Maximum & Minimum Temperature & Rainfall at Jamshoro

4.3 Water Resources and Quality

i. Surface Hydrology

The Indus River is the major source of surface water in the province. There are canals drawn from the rivers and some wetlands also exist in the province. Major important wetlands of the province are Keenjhar, Manchhar and Haleji Lakes. The wetland nearest to the sub-project area is Manchhar Lake.

ii. Groundwater

One of the impeding factors for irrigated agriculture in Sindh is the brackish groundwater. More than 80% of the irrigated land in Sindh is underlain with brackish water unfit for agriculture. The shortage of irrigation water coupled with drought conditions in Sindh has increased the importance of groundwater exploitation wherever fresh water is available.

In the sub-project area, precipitation is the main source of the natural recharge of groundwater. These streams are mostly non-perennial and water passes through them in the form of flash floods after rainfall. Depending on local conditions, the duration of such floods varies from a few hours to a few days.

It was observed that women and children were responsible for fetching water for drinking and domestic use. They fetch water depending on the availability of water sources within and outside the village. The Reverse Osmosis (RO) plants were installed by the government in the area to provide clean water to the inhabitants. However, these are dysfunctional now. Currently, the community purchase drinking water from the nearest town namely Bhan Sayedabad at a considerable cost.

The quality of water in Manchar is highly contaminated and unfit for drinking, according to a study conducted by the Pakistan Council of Research in Water Resources (PCRWR) in collaboration with the US-Pakistan Centre for Advanced Studies in Water (USPCAS-W), Mehran University of Engineering and Technology Jamshoro. The presence of Total Coliform and E.Coli reflects the disposal of municipal waste into the lake

iii. Surface and Groundwater Analysis

Due emergency nature of the works the baseline environmental monitoring will be done by the contractor before the start of the civil works as per the approval of the CSC Environmentalist. Sampling from different locations in the sub-project area will be done by SEPA Approved lab as per SEQS 2016. The selection of locations for monitoring will be done with due consideration to Socially sensitive receptors. (as depicted in Figures 8 & 9).

4.3.1 Air Quality & Noise Level

The sub-project areas are located in a sparsely populated rural area with no industrial or commercial activity. Vehicular traffic on dirt roads causes some dust emissions whose effect is fairly localized. However, traffic on the roads in the sub-project area is low compared to the national highways or other major roads. The ambient air quality tests & Noise levels will also be monitored before the start of the civil work by the contractor after the approval of the CSC Environmentalist.

Rational for the baseline environmental monitoring has been given in Table 4.

Table 4: Rationale for the Baseline Environmental Monitoring

Sr. No	Monitoring Parameters	No. of samples	Rationale
1	Ambient Air	10	One from the camp area, one each from roads no 1, 6, 7, 8, 9, 10, 11, 15, 16,
2	Drinking Water/Ground Water	6	Construction near water body/one each from roads no 1, 4, 10, 11, 15, 16,
3	Waste/Surface Water	6	Construction near water body/one each from roads no 1, 4, 10, 11, 15, 16
4	Noise	64	4 from each road/nearby Socially sensitive receptor

4.4 Biological Environment

The sub-project area falls in a rural locality and has a limited diverse habitat, which supports a few varieties of faunal and floral species. Common animal habitats are mountains, deserts, and wetlands. The following broad categories have been identified for this report focusing on the sub-project areas.

4.4.1 Fauna of the Sub-Project Area

As the population has increased in the sub-project area, wildlife abundance and diversity have decreased to a minimum. Among the small mammal species still found are Red foxes and rats are reported to have resided in the surrounding sub-project area. Snakes and lizards also inhabit. The black rat (*Rattus rattus*), also known as the ship rat, roof rat, or house rat, is a common long-tailed rodent. Among the avifauna, Eagle (*Aquila rapax*), Hawak (*Accipiter badius*), Kite (*Milvus migrans*), Parrot (*Psittacula krameri*), Partridge, Common crow (*Corvus splendens*) and several varieties of waterfowls are reported. Detail has been given in Annexure - III.

Forty-six bird species were recorded at Jamshoro District specifically the Manchar Lake wetland, among them crested lark, Common many, grey shrike, Black redstart, Indian roller, Indian house crow, Bush babbler, and Red-wettle lapwing were the most common throughout the area. The seasonal Status of all recorded avian species is presented in Table- 5. In the past, the lake was the winter home to numerous migratory bird species. Since it was the first wetland on their route, Manchar during winters was redolent with a host of migratory bird species. The pollution has caused a drastic fall in their numbers. The wetland has lost most of its vegetation and varied fish fauna. There is also some domestic sewage incoming from fishermen's boats, hotels and residential areas. There is a lot of disturbance due to fishing activities, tourism and recreation. There is the effect of eutrophication due to the incoming drainage water. There is the effect of oil pollution due to the presence of a large number of fishing boats in the lake[2].

[2] https://www.downtoearth.org.in/coverage/lake-manchar-is-dead-11729

4.4.2 Flora of Sub-Project Area

The proposed project is located in District Jamshoro, which is part of the lower Indus valley. As the climate of the track is arid and subtropical, the original flora of the area consists of tropical thorn forest type vegetation, in which thorny usually hard wooded species predominate with Acacia species being particularly characteristic. However, the natural vegetation has long ago been replaced completely by crops. At present, there is generally a mixture of species found. The area has been used for agricultural purposes for almost a decade; the natural flora has been completely replaced by cultivated species. The dominant floral species include *Acacia modesta*, *Acacia nilotica*, *Dalbergia sissoo*, *Ziziphus nummularia* and plantations of *Eucalyptus globulus* and Populus.

4.4.3 Endemic and Endangered Species

As far as the sub-project area is concerned, none of the endemic or endangered species of both flora and fauna were recorded from sub-project sites. No protected forests were observed near the proposed sub-project area (refer to Figure – 6).

Junglr Babblor

Buzzerd eagle

Indian roller

Grey shrike

Common Kingfisher

Hond heron

Figure 6: Avifauna in the Sub-Project Areas

4.5 Socially Sensitive Receptors along the ROW

In order to identify potentially Socially Sensitive Receptors like religious structures, graveyards, Basic Health Units (BHU), hospitals, schools, etc. A survey of the Project impact area was undertaken. Socially sensitive receptors were identified through direct observation and by interviewing those living within the sub-project area. The indirect impacts on the receptors have been evaluated at 200 meters/650 ft buffer zone of the proposed roads (100 meters/328 ft on each side from the center line of the road). Most of the structures were located near towns and settlements in rural areas and away from ROW.

Mosques, shrines and graveyards are of historical, cultural and religious importance for the people. A detailed inventory of the sites showing the approximate location of the receptors has been provided in Table 6 as well as Figures 8 & 9. All of the receptors are out of the ROW. By applying a careful design strategy all potential impacts were avoided. However, care will need to be taken during construction activity.

Table 5: Socially Sensitive Receptors along the Proposed Roads

Sr. No	Name of Road	Existing Width/ ROW (ft)	Proposed length for rehabilitation/restora-tion (in Kms)	Socially Sensitive receptor *	Distance (ft) from the center line**	Side of Road (Left or Right side)
1	Rehabilitation of road from Jaheja Khanbroth road to Rasool Bux Rodnani and village Muhammad essa	12	3	1 School	200	L
2	Rehabilitation of road from Sehwan Airport road to Bubak	16	3	None of the socially sensitive receptors found in the buffer zone		
3	Rehabilitation of the road from Pir Chattan to Bubak Jaheja Khmbroth road via Dhingano Balal	12	4			
4	Rehabilitation of road from Jhangara Chhinni road to village Kot Barocho via Tahani	12	9.65			
5	Rehabilitation of road from Pre-stressed Bridge at LS Bund to Village Bi-lawalpur	12	3			
6	Rehabilitation of the road from Kot Barocho to Shaikh Dhaman	12	5			
7	Rehabilitation of road from Jhangara Byepass road	18	3	1 Mosque	341	L
8	Rehabilitation of road from Sehwan Jhangara road to village Akri	12	3	None of the socially sensitive receptors found in the buffer zone		
9	Rehabilitation of road from Chingiani to Rajab Shakhani	12	4			
10	Rehabilitation of road from Jaheja Khanbroth to Village Bilhan	12	3.22			
11	Rehabilitation of road from Jhangara to Naing Sharif via Kai (18' Wide) i/c 1300Rft High-Level Causeway	18	20			
12	Rehabilitation of road from I.H.Way Yaqoob Panhwar Old Alignment	18	6.2			
13	Rehabilitation of road from Bubak Shah Bukhari to Village Sawan Laghari	12	3			
14	Rehabilitation of road from Ghulam Nabi Chutto to village Hadi bux chutto	12	3.2			
15	Rehabilitation of road from Indus Highway to Sehwan Airport dual car-riageway	24	3			
16	Rehabilitation of road from Sukhya Mori to Qadir Bux	12	8	1 Shrine & 1 Mosque	324	1L 1R

*Category (Mosque, School, BHU, Hospital, Graveyard, Mazar, Mandir, etc.) **the indirect impacts on socially sensitive receptors have been evaluated at 200 meters/650 ft buffer zone of the proposed roads (100 meters/328 ft on each side from the center line).

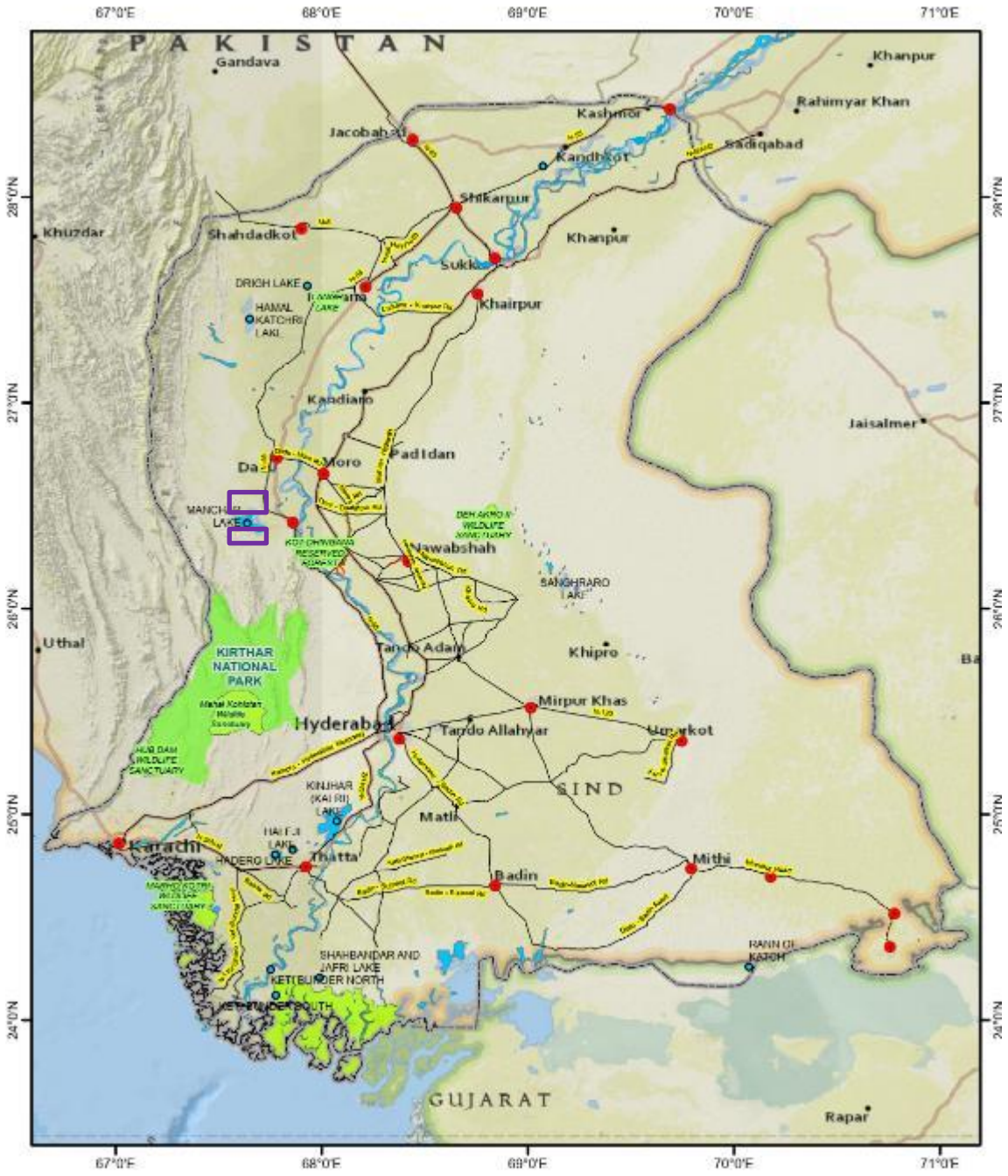

Figure 7: Locations of Protected Area with respect to Sub-Project

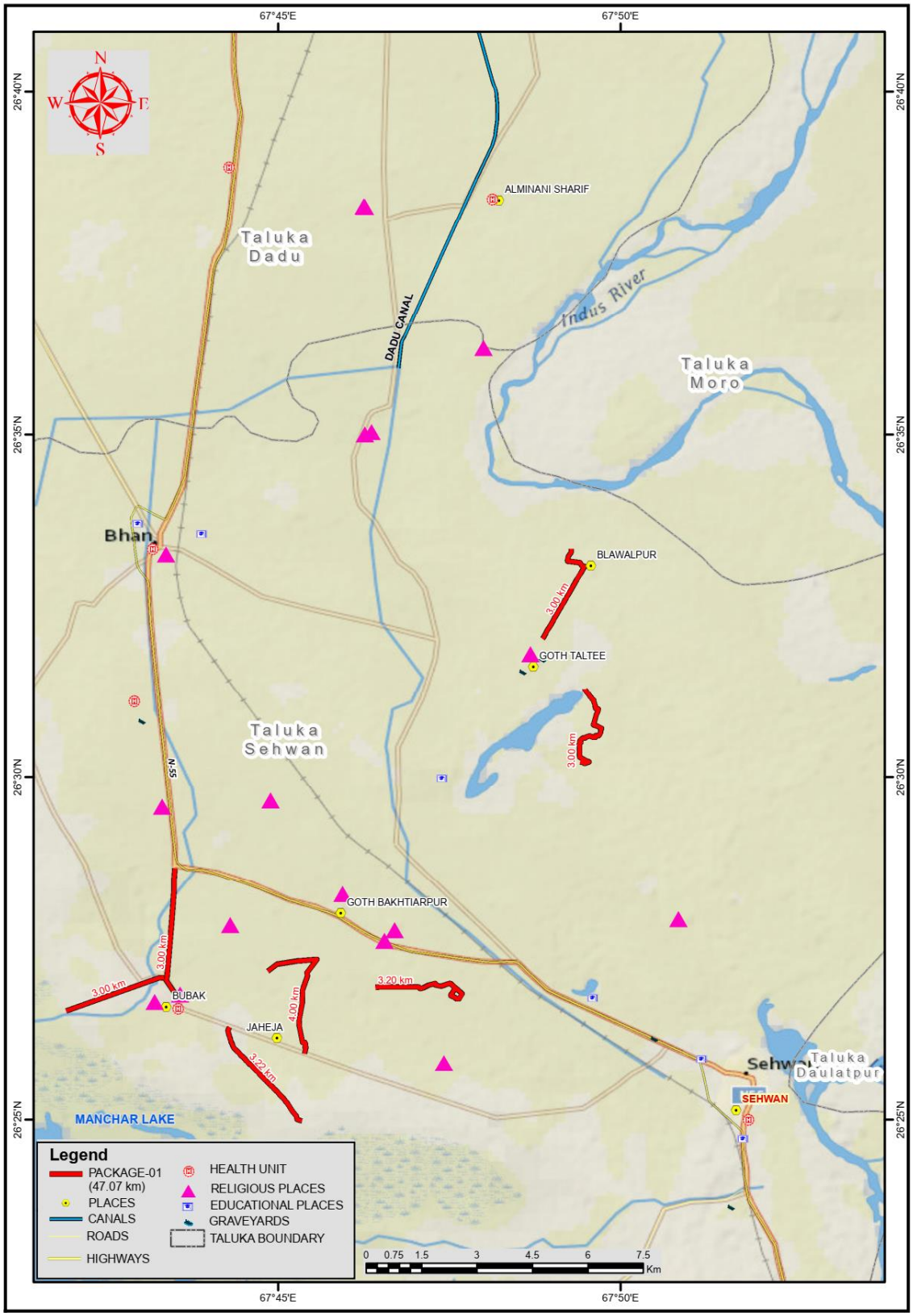

Figure 8: Socially Sensitive Location Map Part-A

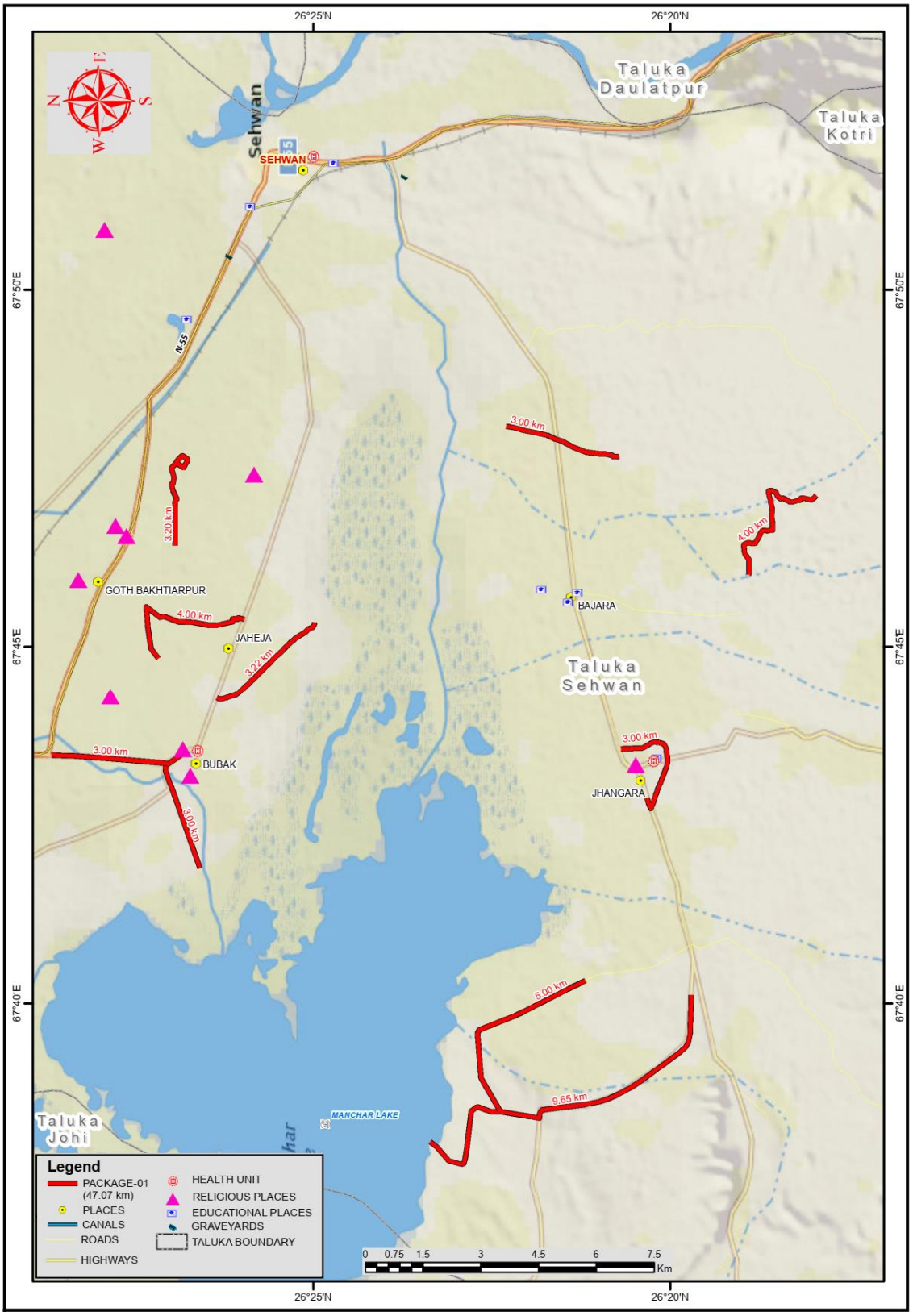

Figure 9: Socially Sensitive Location Map Part-B

4.6 Socio-Economic Environment

4.6.1 Demography

The sub-project area is located in the Jamshoro district, Taluka Sehwan, Taluka Bubak and Manjhand both have one road each. (Table 6[3]). Most inhabitants are Muslims. The population represents different cast groups including Noohani, Gabol, Shahani, Sahtani, Khaskheli, Bughio and Shahpat. Social harmony is prevalent in the area and people maintain their social relations and participate in each other's social events. The area has high poverty and low literacy rate. The main livelihood of the people is related to rain-fed agriculture and livestock rearing followed by daily wages earners who primarily work as laborers,

Table 6: Demography of the Subproject Areas

Factor	Jamshoro
Area: km^2	11,260
Population (Persons) Male Female	993,908 (Manjhand 140,766, Sehwan 269,817) 55.14% 36.71%
Sex ratio (M:F)	111.13:100
Population Density Urban Population Rural Population	88.71 per km2 561,287 432,621
Avg Household size	5.37 people
Literacy ratio 10+ Male Female	46.47%: 42.88% 17.45%

4.6.2 Languages

Sindhi is the dominant language spoken in the sub-project area, as 100 percent of the population speaks Sindhi and Balochi. The national language, Urdu is spoken and understood by the majority of the people in the sub-project area.

4.6.3 Housing

The project area consists of a rural population living comparatively in isolation. The majority of the population lives in small settlements of 30 to 250 houses. Some of the houses usually have a boundary wall enclosing enough space for cattle and storage. The study area consists of various types of housing patterns such as Paka (cemented), Semi-Paka, Kacha (roofs of grasses with mud plaster). It was observed that all the people were living in self-owned houses.

4.6.4 Telecommunication

During the survey, the community reported that there is no landline facility available in the sub-project area. Mobile phone coverage is better in the sub-project areas.

[3] District-wise Tables - Census 2017 Final Results". *pbs.gov.pk*. Pakistan Bureau of Statistics. 2017.

4.6.5 Energy Sources

Most of the sub-project areas are without electricity. The area people collect firewood from the surrounding area and some people purchase firewood from the nearby town. The cost of firewood is Rs 600 per 40 kg. Moreover, the use of both solar systems and diesel for irrigation purposes was also witnessed in some villages of sub-project areas. Diesel is mostly used at nighttime.

4.7 Traffic Studies

4.7.1 General

A survey of the present traffic was done to analyze the current state of traffic and use the survey results as the basic data for forecasting traffic demand. In order to forecast the traffic demand, it is deemed necessary to review the recent present state traffic closely. Therefore, a survey has been conducted regarding the traffic volume, road conditions and traffic facilities, etc. The traffic volume has been collected through field surveys in the project areas.

Table 7: Traffic Volume Survey Approach

Contents	Items	Description	Remark
Traffic volume survey	• By selection, type, the direction of the vehicle	24hr Survey For a total of 14 vehicle types	By the PEAS survey team.
Travel speed survey	• The average speed of traffic by section and direction.	• The survey by actual drive.	By experts visit.
Reference to Literature Data	• Socio-economic index	Socio-economic index of influence, direct/ indirect	Reference to literature data. To be utilized as fundamental data of traffic demand forecast.
	• Land use plan and environs development plan for the neighboring area	• Major geographic features and urban infrastructure • Traffic facility installation plan • Status of designation of region and zone	
	• Installation of traffic facilities and relevant plans	Master plans associated with the project	

4.7.2 Method of Traffic Volume Survey

- Period: 5 Dec to 8 Dec 2022 for 4 days
- Method: On-site traffic volume survey by the consultant team
- Location: At Jamshoro roads
- Duration: 24 hours for project route

Classification of vehicles for traffic survey: Fourteen different classes of vehicles have been considered in the current traffic count survey. Details of these vehicles are provided in Table 8.

Table 8: Vehicle Classification

Classification	Vehicle Type	Classification	Vehicle Type
1	Cycle	8	Bus
2	Animal Drawn	9	Truck (2-axles)
3	Motor Cycle	10	Truck (3-axles)
4	Rickshaw	11	Truck (4-axles)
5	Car/Jeep	12	Truck (5-axles)
6	Wagon/Pickup	13	Truck (6-axles)
7	Coaster/Mini	14	Tractor Trolley

Result of traffic Volume Survey: Total number of vehicles counted at the proposed project location is summarized in Table 9.

Table 9: Traffic Volume Survey Results

Classification	Jamshoro	Jamshoro	Jamshoro	Jamshoro
Survey Date	05 (Man) Dec 2022	06 (Tus) Dec 2022	07 (We) Dec 2022	8 (Thu) Dec 2022
Traffic volume	10,673	11,740	15,262	19,841

4.7.3 Analysis of Traffic Present State

Traffic volume characteristic of Jamshoro

Monthly adjustment factor: Monthly and daily adjustment factors are used to convert the traffic volume into Average Annual Daily Traffic (AADT). Weekly and monthly adjustment factors have been adopted by National Transport Research Centre. The adopted monthly and daily adjustment factors are provided in Tables 10 and 11 respectively.

Table 10: Monthly Adjustment Factor

Monthly	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Factor	1.011	1.002	1.008	0.993	0.988	0.977	1.004	1.008	1.009	1.009	0.994	1.004

Source: Traffic Factors for Pakistan III, 1992, NTRC (National Transport Research Centre)

Table 11: Daily Adjustment Factors

Monthly	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Factor	0.999	0.995	0.996	1.002	1.001	1.003	1.000

Source: Traffic Factors for Pakistan III, 1992, NTRC (National Transport Research Centre)

Conversion into average annual daily traffic volume*:* AADT (Average annual Daily Traffic) = ADT/ (Monthly Adjustment Factor* Daily Adjustment factor). AADT of various types of vehicles is provided in Table 12.

Table 12: AADT of various types of vehicles

Classification	Animal Drawn	Bicycle	Motor Cycle	Car/ Jeep
Jamshoro	20	145	1942	6717
	HIACE Wagon	**Mini Truck**	**Bus**	**Tractor Trolley**
	225	179	21	191
	Trucks			
	2 –axle	**3 –axle**	**4 –axle**	**Trailer / 5 Axle & Above**
	766	349	178	255

Vehicle Type Composition: The component rate of vehicle types is passenger car (61.13%), pickup (2.05%), motorcycle (17.67%) and truck (6.97%). These are shown in Figure 10.

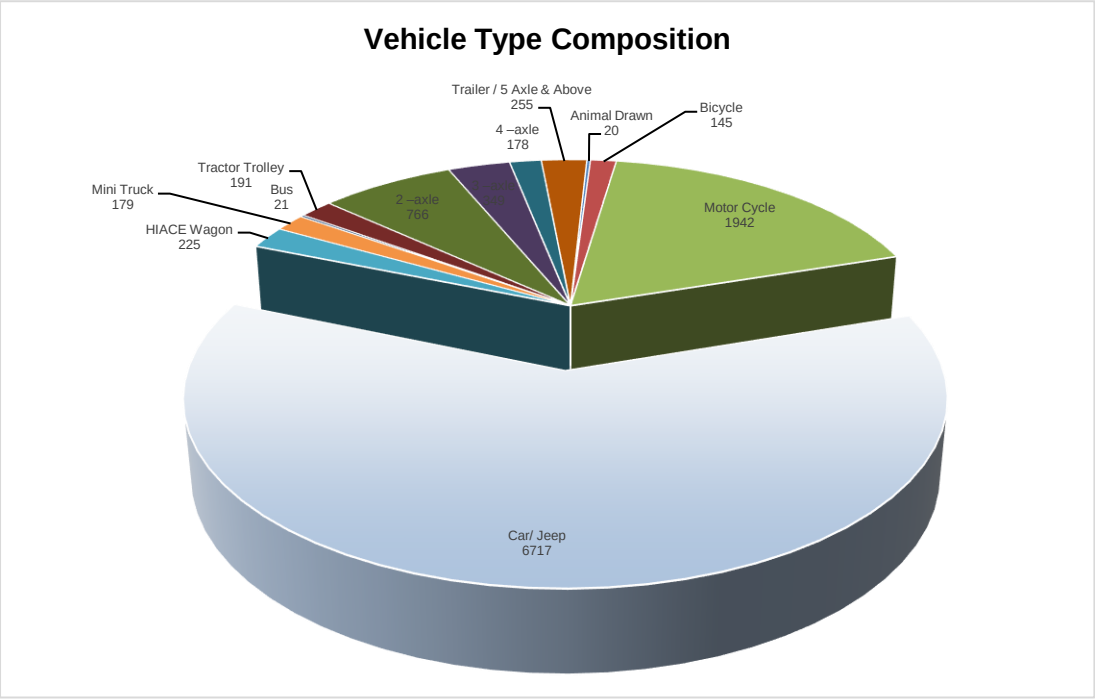

Figure 10: Vehicle Type Composition

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5. STAKEHOLDER CONSULTATION AND INFORMATION DISCLOSURE

This section describes the consultations undertaken with the stakeholders in the sub-project areas to explain to them the project components and activities and to seek their views and opinions on the sub-project. The consultations were held with communities/households located in the sub-project interventions who are also the beneficiary of the sub-project. They include households and owners of commercial entities bearing positive and negative impacts of the sub-project. Institutional consultation with the relevant government agencies is also made part of this section, delineating information disclosure of environmental social safeguards measures.

5.1 Need of Consultation

The Environmental and Social Framework (ESF) of the World Bank under Environmental and Social Standard (ESS)-10 requires stakeholder engagement and information disclosure for the project. ESS-10 thrusts on to identifying and engaging the stakeholders, especially the ones affected by the project activities. It advises building and maintaining a constructive relationship in order to increase their interest and support for the project and to provide the stakeholders with enough opportunity to record their concerns so that their apprehensions are satisfactorily addressed.

The ESF necessities that an Environmental and Social Management Plan (ESMP) is prepared through a process of consultation with all concerned stakeholders and publicly disclosed. The process helps to minimize adverse environmental and social impacts and reduces the expected conflicts at the design and implementation stages, minimizes the risk of sub-project delays at the construction stage, and enables making the subproject more economical and socially acceptable. Moreover, public consultations create a sense of ownership among the stakeholders regarding the sub-project and disclosure further ensures transparency in sub-project activities.

5.2 Identification of Stakeholders

There are two types of stakeholders, i.e. primary and secondary stakeholders. In accordance with the World Bank guidelines, the primary stakeholders are the initial stakeholders, such as households being affected by the sub-project and local people including women located in and around the sub-project area. The secondary stakeholders for the sub-project are the representatives of Government Departments/agencies involved in the planning, design, implementation and operation of the sub-project, including various provincial government departments such as City/District Administration, Environment Protection Agency Revenue Department, Works & Services Department, etc.

5.3 Engagement approach

For the community-level consultations, three days before the consultations, representatives of all the segments of the community were approached to invite for consultations to ensure their participation in the consultation sessions. During the process, the invitation purpose, date and time of the consultation were shared with the stakeholders.

5.4 Stakeholder Consultation

The social and environmental staff of consultants held consultation meetings with the local community residents of the sub-project area in the month of January – February 2023.

The field team comprising the Environment and Social Safeguard Consultants visited the nearby communities of the sub-project to get the views of the people of the sub-project, who are going to be affected and beneficiaries. They appreciated the client for taking up the initiative of rehabilitation and restoration of rural roads and allied structures. According to the community, the rehabilitation works would enhance the communication means and transportation which will benefit the sub-project area.

The social and environmental team carried out a public consultation with the households and local people. Participants of public consultation meetings were briefed on salient features of the Environmental and Social Management Plan (ESMP) prepared for the sub-project. The team assured households that all the concerns raised by them would be addressed. Measures have been made part of ESMP to minimize the impacts during construction. Mitigation measures will be adopted to control noise and air pollution. Participants were apprised that their concerns and suggestions have been incorporated into the ESMP. In case of any complaint/grievance from the households, a well-defined Grievance Redress Mechanism (GRM) is devised in ESMP. Participants were also briefed on GRM

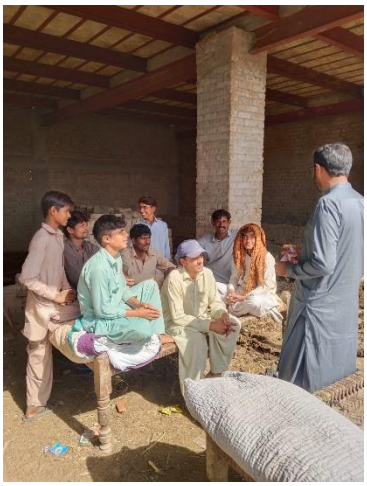
Table 13: Details of Community Consultations

Name of Sub Project	Name of Settlement/ Village	Date of Consultation	No. of Participants
Road No 4, 6, 7, 11	Jhangara	06-01-2023	22
Road No 1, 2, 15	Babuk	06-01-2023	12
Road No 3, 10, 14	Jaheja	06-01-2023	15
Road No 8, 9	Bajara	06-01-2023	14
Road No 13, 5	Ghot Talti, Bhawalpur	07-01-2023	15
Road No 16	Ghot Raees Ghulam Nabi	07-01-2023	12
Total			**90**

Table 14: Summary of concerns raised by the community during consultations

Comments /Observations	Action /Response
Participants raised a concern temporary restrictions to access by-passers will occur due to construction activities of the sub-project. They suggested undertaking construction activities at a quicker pace.	The team briefed that the contract will be bound to provide a schedule of work and that will be communicated to local people. The contract will also work in patches to reduce the risk of restrictions on access. Participants were also briefed on GRM
Minimizing the construction duration Roads should be rehabilitated as early as possible travel time is increased due to damaged roads.	Construction will be programmed to minimize the length of disruption at any one point These issues will be addressed once road is constructed.

Participants apprehended that construction activities would lead to dust and noise generation.	The field team briefed that the contractor will do water sprinkling to reduce dust and undertake proper tuning of vehicles for noise control. These measures will be ensured in true letter and spirit.
The community pointed out that the rainwater accumulated during the 2022 floods, affected the area badly as the water remained stagnant for a couple of months. Water drainage should be provided for the drainage of rain/flood water.	The SFERP team briefed that the damaged culverts are rectified or replaced while a sufficient number of culverts are provided for proper cross-drainage. Vented causeways have also been provided. The flow from culverts and road drainage has to be ensured.
The community demanded the provision of semi-skilled and unskilled jobs for local labour.	Unskilled jobs will be given to local's people where possible. Training will be provided
Flagmen need to be in place for traffic control, which is thought particularly important for the settlements located along the roadside.	International Safety Standards for road safety and community safety shall be adopted and maintained.



Consultation with residents of Jaheja

Consultation with residents of Babuk

Consultation with residents of Goli Mar Colony, Nawab Shah

Consultation with residents of Ghot Raees Ghulam Nabi

Consultation with residents of Jhangara

Consultation with residents of Ghot Talti

Consultation with Line Department

Figure 11: Consultations Photolog

5.5 Institutional Consultation

The Environment and Social team conducted a consultation with relevant government departments in Sehwan, Jamshoro in February 2023. The team briefed the officers of government agencies regarding the salient features of the sub-project. It was informed that the “Detailed Design of the Sub-Project, under PIU-SFERP being implemented by the W & S Department and funded by the World Bank. They were informed that the project intends to

improve the roads which are affected by rain/flood water. The primary goal of the project is to meet the present and future requirements. It was also briefed that the project will bring positive impacts on the lives of the local population through improved mobility.

Table 15: Details of Consultations with Line Departments

Sr. No	Designation- Department	Representatives of Department
1.	Deputy Commissioner, Revenue Department	Farid Uddin Mustafa
2.	XEN, Irrigation Department	Sohail Hameed Baloch
3.	XEN Highway Department	Hameed Shaikh
4.	Deputy Director (Technical) SEPA	Mr. Ali Nawaz
5.	Chief Engineer Jamshoro Kotri Barraje	Haji Khan Jamali
6.	Municipal Administrator	Jamshoro Asghar Bhand

Generally, the officials were of the view, that the construction of the proposed project will have a positive impact on the people living in the sub-project areas. During the meeting, the officials extended their full cooperation for the proposed project and their views were in favor of the project.

Table 16: Summary of Concerns Raised by Institutional Stakeholders

Comments/Observations	***Actions Responses***
The majority of the stakeholders expressed their positive views related to the rehabilitation of flood-affected roads.	In general, the participants approved of the project and believed that there is a dire need for this kind of project as the recent floods had badly damaged these roads.
Detailed discussions were held regarding the screening of the sub-project according to the Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021	As the proposed sub-project is restoration /rehabilitation hence the proposed sub-projects According to Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021, the sub-project falls under category schedule II – F. Transport 3. Rehabilitation or rebuilding or reconstruction of existing roads more than one kilometer in urban areas and more than 5 km from rural areas" (only 01 road is more than 5 km). Due to the emergency nature of work and impact will be low and confined during the construction stage hence in spite of submitting the IEE monthly compliance & effect monitoring will be strictly follow-up.
The stakeholders suggested that the construction of the proposed project would lead to improvement in overall socioeconomic conditions in the sub-project areas.	Noted
The stakeholders suggested that the construction camp must be outside the	A single camp has been proposed for about 500 meters away from the settlement furthermore camp activities will be kept confined within the boundary

Comments/Observations	***Actions Responses***
settlements minimum 500 away from the fence to avoid social issues	area, and activities will not be allowed during Juma prayer and other festive times/days.
The stakeholders suggested that care must be given to protect fauna and flora during the construction phase.	The plantation would be undertaken with the preference of local species no exotic species will be promoted. The fruit plants will be provided to locals to plant in their adobe only.
The Stakeholder suggested that Emergency Preparedness and Response training should be given.	The duration of this training will be 3 days and will be free of cost. The training will guide the labor and staff in emergency preparedness and response to the emergency at construction sites.
The Stakeholder shows their concern regarding the impacts during the construction stage on waste management and land acquisition	Social and environmental teams briefed about the mitigation measures that will adopt to control dust, noise, health and safety issues. There are no issues regarding land acquisition. If the issues occur, then these matters will be dealt with Revenue Department. The contractor shall dispose of the hazardous waste through EPA-certified contractors.
The privacy of women may be affected due to the project. Women currently collect fuel wood, tend to livestock, etc. and the family is not concerned about their safety. However, with the increase of outsiders, this freedom of movement for women will be reduced.	This impact intensity and probability will be low due to the hiring of local labour anyhow, cultural emersion and sensitization training will be a part of the induction program for new employees. Moreover, a specific clause would be made part of the contract/bidding document as “No interaction of labour with women and children during the construction phase in the sub-project area.” as well as Labor Code of Conduct.

5.6 Information Disclosure

As a disclosure requirement, the environmental and social management framework (ESMF) will be uploaded on the Provincial Disaster Management Authority (PDMA) website, while an executive summary of ESMP of the reported sub-projects will be translated into Sindhi after approval from the World Bank will also be uploaded on the website. In addition to this ESMP document will be made available at the campsite/s.

5.7 Future Consultation Plan

The stakeholder consultation is a continuous process and should be carried out throughout the life of the sub-project. The consultations carried out during the present ESMP stage and reported are essentially among the initial steps in this process. During the subsequent project phases as well, the participation of the project stakeholders needs to be ensured as per SEP of SFERP. Supervision Consultants along with PIU staff will ensure time-to-time consultation with locals to get their feedback on project activities and their related complaints.

6. ENVIRONMENTAL & SOCIAL IMPACTS AND MITIGATIONS

The reconnaissance field visit was carried out to assess the social and environmental impacts of the activities to be undertaken for the construction of rehabilitation works. A screening checklist showing rapid assessment of potential environmental and social impacts, mitigation measures and residual impacts after mitigation reveals that the project activities will not cause significant disturbance and inconvenience to the local community and natural environment of the area rather than provide the safe and steady mode of communication by improved roads after the flood. All the impacts that have been identified during the reconnaissance are associated with the construction phase and minor to moderate in severity, and can easily be mitigated through planning or adopting appropriate management measures. The minor impacts can be resolved through the best management practices. Social impacts such as getting borrow pit area, hiring laborers and setting up of labour camp will be mitigated according to applicable policies and procedures.

The social impacts associated with the rehabilitation works will be managed by proper guidance and strict monitoring of subproject activities. The Labourers are expected to be recruited entirely from local areas, which will enhance economic opportunity for them.

6.1 Major Social & Environmental Impacts and Mitigations

It is evident from the screening checklist that the sub-project is very beneficial concerning the adjoining area. As regards the adjoining area, the people of this area will be the main beneficiaries. The following sections give in detail the possible environmental impacts and their mitigations.

During the construction stage of proposed rehabilitation works, the surrounding area will face some undesirable effects. Many impacts are temporary and may occur during construction. Some of them are described below.

6.2 Topsoil Erosion

6.2.1 Description

Excavation will expose bare soils that may erode. This will include sites such as; borrow pits, quarries, road embankments, culverts, bridge abutments and road diversions.

Runoff from rainfall can lead to erosion of the road surface or ditch bottoms. Drainage channels leading from the roads to nearby watercourses are receptors of soil and rock eroded from the unsealed surfaces of these roads.

6.2.2 Mitigation Measures for Erosion

Excavation of earth fill will be limited to an appropriate depth of 20cm. Priority will be given to getting the earth fill material from the licensed contractors, where the use of agricultural land is unavoidable private land will not be taken until a prior written agreement (with local tradition) and documentation of relevant details of compensation (on prevailing market rates) are signed between the owner/s and relevant authorities. Furthermore, the top 15cm of topsoil will be stripped and stored and then replaced after the removal of borrowed material. Where deep

ditching is carried out, the top half-meter layer will be stripped and stockpiled. The ditch will be filled initially with debris/scrap material from old construction and leveled with stockpiled topsoil later.

The provision for vegetation with a fast-growing crop and a native seed mix immediately after filling placement to prevent scour and encourage stabilization has been made in the design. Use of stone pitching or riprap has also been provided in the design at appropriate places, especially around culverts; Provision for rip-rap in discharge zones from drainage structures has been made in the design to reduce erosion; Side slopes will be adjusted to a gradient necessary to reduce erosion potential or, if steeper, stabilized, covered with riprap or other material to prevent soil erosion.

6.3 Air Pollution

6.3.1 Impacts of Air Pollution

The air-related mitigation is discussed as follows, during the construction phase of the proposed sub-project; some adverse impacts on the environment by suspended dust and noise are foreseen. As ESS3 of ESF 2018, the contractor will comply with the requirements for resource efficiency and pollution management and prevention by preparing a dust abatement plan before the start of the construction activities.

The Batch plant requires cement and dry sand gravel to be fed into a mixing chamber, and the addition of water to make concrete. Considerable fine dust is emitted when bagged cement is loaded manually into the batch plant hopper, as well as with the conveyor system bringing the materials to the plant.

Air quality would be disturbed during the construction stage due to vehicular movement, and the release of particulate matter $PM_{2.5}$ from vehicular emission. Construction activities will generate dust and pollute the surrounding area. The emission from the machinery used in earthwork activities will also degrade the air quality of the site. The exhaust of noxious gases from the movement of heavy machinery will further pollute the air, which will adversely affect the health and vigor of plants. Smoke emissions from vehicular movement and heavy machinery would slightly cause the smoke problem in the nearby villages, which are located near the construction areas.

6.3.2 Air Pollution Mitigation Measures

Dust from the cement work will be avoided by using bulk cement brought to the plants in large tanker trucks and transferred to the plant hoppers via a closed system. Batch plant/s will need to be equipped with dust suppression equipment, now standard on most such facilities, or which can be easily retrofitted.

The air-related mitigation is discussed as follows, during the construction phase of the proposed sub-projects; some adverse impacts on the environment by suspended dust and noise are foreseen. These will be effectively mitigated by adopting the following preventive measures;

- The Contractor will be required to have approval (from The Construction Supervision Consultant) for the dust abatement plan/Pollution Prevention Plan.

- Regular spraying of water should be undertaken to minimize dust pollution. The water would be obtained from tube wells installed by the Contractors or maybe grey water from the camp areas and reuse of wastewater from batching plant.
- All vehicles, machinery, equipment, and generators used during construction activities will be kept in good working condition to minimize exhaust emissions & limit the idling time of construction vehicles to 2 minutes to minimize local air pollution.
- Enforce the maximum speed limit to 10km/h for vehicles to reduce dust emissions.
- Native species trees shall be planted, and no rapidly growing trees, shrubs and grasses in the sub-project area shall be allowed during the operation stage of the sub-project with the collaboration of the Forest department.
- Conduct ambient air quality monitoring as per SEQS periodically as per Environmental Management Plan (EMP).

6.4 Water Pollution

6.4.1 Water Related Impacts

During the construction stage, different types of activities such as cutting, earthwork, and concrete work would alternately result in deteriorating the surface water quality. Canals and water courses crossed the road, and during the rehabilitation works of culverts and bridges can be polluted by the accidental discharge of cement and other chemicals like epoxy and paints.

A secondary adverse impact is the potential spillage of chemicals, hydrocarbons and other pollutants as part of the construction process as well as contamination arising from the improper disposal of wastes (organic and inorganic) at the camp and work sites.

6.4.2 Water-Related Mitigations

Asphalt should not be applied during heavy rain to avoid it being washed into watercourses. The water channels have to be diverted properly, and a protection mechanism should be provided, or construction will be undertaken during the dry season.

A contractor will make his arrangement, would not rely on existing community resources, and would not extract from sources currently used by the community. Moreover, the Contractor must provide the following facilities at each campsite: Latrines; lined washing areas; septic tanks, and soaking pits for toilet waste. Key mitigation measures are listed below.

- There should be proper septic tanks and soaking pits for sewage treatment and disposal, sewage/sanitation at work camps and proper wastewater collection facilities. Wastewater effluent from contractor/s will be passed through an oil skimmer and to gravel/sand beds to remove oil/grease contaminants before discharging it into the water body. The Septic tank and soak pit shall be covered properly to avoid any obnoxious smell in the surrounding areas. The soak pit will be built in absorbent soil and located 300m away from a water well. Soak pits will be designed to accommodate wastewater generated during the total operation. Soak pit will be constructed such that surface runoff cannot enter the pits. 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.

- To overcome the drinking water contamination issue, at the construction camp/s, 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 shall prepare, and implement a spoils management plan under the supervision of PIU.
- The E & S team of PIU shall carry out regular monitoring of water quality.
- Wastewater from laundry, kitchen washings and showers will be disposed of in separate soak pits.
- Soak pits will be built in absorbent soil and located 250 m away from a surface water source or groundwater well.
- In case the soak pits are filled, greywater will be sprinkled over access tracks. A sprinkling of greywater will be done in a manner such that ponding of water is avoided.
- Water consumption will be monitored during the construction stage and records will be maintained to avoid any wastage.
- Diesel, oil, and lubricants should be properly stored following petroleum regulations. This will be the responsibility of the contractor.
- It has been further, proposed that before the start of the construction, the contractor will establish updated baseline environmental monitoring of air, water & noise including the soil analysis (trace metals such as Cd, Zn, Cu, Cr, Pb and Ni as per WHO standards) for comparison during the construction phase. Permissible limits/standards according to the World Health Organization and the Food, and Agriculture Organization of the United Nations (FAO) indicated for soil, and limits set by SEQS for Air, Water& Noise will be followed as standards for the comparison.
- Appropriate arrangements will be made to stop stones and soil to slip into the river water.
- Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets;
- Dispose of any wastes generated by construction activities in designated sites;
- Conduct surface quality inspection according to the Environmental Management
- Plan (EMP) while adhering to SEQS 2016.
- Community liaison will be maintained and GRM will be established to address complaints related to waste disposal.

6.5 Diversion of Water channels

6.5.1 Impacts due to diversion of water course

Inadequate diversion of canal/water course will affect the water supply to agricultural land of communities living nearby, which may create a social issue. Insufficient diversions/bypasses around bridges and culverts under construction could cause a disturbance to construction activity as well as create a nuisance for the community and project workers.

6.5.2 Mitigations for diversion of water course

The contractor should provide an adequate-sized diversion so that there shall be no disturbance to the water flows of the canal /water course. 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.

6.6 Noise Pollution

6.6.1 Impacts of Noise Pollution

Construction works will be conducted along the roads in rural/semi-urban areas, where there are houses, schools and hospitals, religious places and small-scale businesses. An increase in noise level may be caused by excavation, particularly the breaking of cement concrete or bitumen roads, the operation of construction equipment like concrete mixers, and vibratory rollers used to compact subgrade materials and the transportation of equipment and materials. Vibration generated from construction activity, for instance from the use of pneumatic drills, will have an impact on near buildings. This impact is negative but short-term and reversible by mitigation measures.

6.6.2 Noise Related Mitigation

Plan the activities in consultation with CSC environmentalists so that activities with the greatest potential to generate noise are conducted during periods of the day, which will result in the least disturbance. Machinery operations close to socially sensitive receptors area are restricted to daylight hours, and a schedule will be agreed upon between the contractor and the local communities. Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach. As a mitigation, the works shall be to limit working hours (8 hours a day) to between 9 am and 5 pm (can be altered as per weather conditions special reference to the summer seasons. Break will be considered during peak time 2 pm to 5 pm), six days a week. Noise monitoring will be conducted every month as recommended in ESMP as per SEQS.

In spite of this, the affected communities will also demand to carry out noise monitoring in case of any complaint. The noise level of machines to be used during the construction will be controlled and measured will be taken to limit the levels as per SEQS, as far as possible and the workers will be provided earmuffs, where necessary. 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 socially sensitive receptors.

Community liaison will be maintained to ensure that complaints and grievances are addressed as soon as possible. Identify any buildings at risk from vibration damage and avoid any use of pneumatic drills or heavy vehicles in the vicinity. Consult the custodians of important buildings, cultural and tourism authorities and local communities in advance of the work to identify and address key issues, and avoid working at sensitive times, such as religious and cultural festivals.

6.7 Waste Management

6.7.1 Impacts of Waste

As part of the reconstruction process, the asphalt layers of the existing road will be removed, together with base course material that is unsuitable for re-use. There will also be unused

construction material (sand, crush), empty drums, concrete waste and waste from work camps.

Proper management of waste is also important because of the risk that improper waste handling and disposal pose to human health and environmental degradation. Careless and indiscriminate open dumping of wastes can create unsightly and unsanitary conditions within the project area.

The total quantity of domestic waste generated will vary depending on the strength of labor that the contractor poses to use. Most of the laborers will be locals who will return to their homes at the end of the working day. A maximum of about 25 % of labour comprising mainly skilled labour will reside at construction camps at the peak of the works.

6.7.2 Mitigation for Waste

The asphalt and base course removed from the existing road will be recycled. It may be re-used in the soft shoulders or as fill for other parts of the new road depending on the quality of the material. It may also be used as a backfill for borrow pits and then over-lain with topsoil. Asphalt can be pulverized, spread on access roads and compacted.

The contractor will identify dumping locations for construction debris and nonhazardous solid waste with respective Taluka Municipal and EPA Jamshoro.

The contractor shall identify any hazardous waste as part of its Waste Management Plan and dispose of the material through Sindh EPA-approved waste contractor under section 13 of the Sindh Environment Protection Act 2014.

For solid wastes, the following mitigation measures are recommended:

- No waste will be disposed of in the field. All waste will be disposed of in the waste bins provided within the working area.
- Combustible noncombustible and hazardous waste will be temporarily stored on-site and handed over to approve waste contractors for recycling purposed and safe disposal.
- Encourage staff (through training) to reduce and reuse waste wherever possible.
- Arrange for regular collection of camp waste and transfer to storage area/disposal with the cooperation of local admiration.
- Furthermore, the contractor will draft The Waste Management Plan (WMP) and get approval from PIU. The Contractor shall include details of the procedures for the collection and disposal of wastes. The Plan shall deal with each waste stream separately.

6.8 Traffic Management

6.8.1 Traffic diversion and/or road closure.

Rehabilitation of road works significantly impact traffic movement. This should be avoided as far as possible by proper planning of construction works. Excavation along the roads, hauling of construction materials and operation of equipment are on-site can cause traffic problems. If traffic diversion and/or road closure is required for the proposed works, prior consent from the department will be required and prior information to affected areas and the public should

be disseminated through consultations by PIU. The potential impact is negative but short-term and reversible by mitigation measures.

6.8.2 Traffic/Access-Related Mitigations

The construction contractor will be required to:

- The plan works to minimize traffic disturbance/blockades; in all the roads and streets in the town, work planning is crucial to minimize the inconvenience to the public due to excavations.
- Prepare and implement a Traffic Management Plan
- Locate entry and exit points in areas where there is low potential for traffic congestion;
- Keep the site free from all unnecessary obstructions;
- Coordinate with Traffic Police for temporary road diversions and provision of traffic aids if transportation activities cannot be avoided during peak hours;
- Notify socially sensitive receptors by providing sign boards informing nature and duration of construction works and contact numbers for concerns/complaints.

Increase workforce in the areas with predominantly institutions, places of worship, business establishment, hospitals, and schools; Consult businesses and institutions regarding operating hours and factoring this into work schedules.

Proper road signage and traffic aids should be provided at the site. Outreach to nearby communities informing them of road closures and construction schedules. Conduct an awareness program on the nature of work, likely disturbances and risks and construction work, mitigation measures in place, entry restrictions, and do's and don'ts; and to the communities.

6.9 Biodiversity

6.9.1 Impacts on Biodiversity

ESS6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources. The objectives of this standard are to protect and conserve biodiversity and habitats and avoid adverse impacts on biodiversity and habitats because of project activities. The following mitigation measures will adhere to comply ESS6. No tree cutting has been involved due to existing RoW will be used for rehabilitation work and no rare or endangered aquatic faunal or floral species occurring in the sub-project area. Furthermore, all of the roads are in a rural area so no wild animals or critical habitats will be impacted. The sub-project will pose a minor negative impact on the fauna present in the area.

Hunting/trapping/poaching of birds is the main threat, especially in winter when the water birds visited Manchar lake. The wetland had become a neglected wetland and it had lost its importance as a main wintering site due to the effect of polluted water which is regularly coming into the lake through the Main Nara Valley Drain.

6.9.2 Mitigations for Biodiversity

During the baseline survey of the sub-project area, no endemic or rare species were observed in the primary impact zone as well as the secondary impact zone. All species recorded during the field survey have a wide range of distribution. Since the campsite will occupy small areas

and will be located in existing clearings, the impacts are reversible and localized by adopting mitigation measures. Use of local vegetation as fuel by labor will be prohibited.

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 that's during winter. 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. New and good-condition machinery with minimum noise will be used in construction. Noisy work will not be carried out at night time so that there should be no disturbance to local birds and animals. Maintain setbacks from wetlands, live dens, live nests, and live rodent holes & keep lights used at the camp to the minimum required. Use low upward scattering lights.

Priority will be given to the relocation of the trees that will come under impact. Tree inventory of the felling of the tree shall be maintained during the construction period. For each tree felled, five saplings of approved tree species will be planted.

6.10 Occupational Health & Safety

6.10.1 Impacts on Construction Workers

The health and safety risks which could impact the construction workers are primarily associated with the construction activities of the sub-project. In particular, the various risks of injuries and accidents for workers are related to the rehabilitation of flood-affected roads and associated activities. The typical risks include exposure to the physical hazards of using the construction equipment, working near running traffic, operating equipment, working on and near scaffolding, tripping and falling, handling bitumen, burns, 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.

6.10.2 Health and Safety-Related Mitigations

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

- The contractor will have to prepare Site Specific Labour Management Plan, an Occupational Health and Safety Plan as well as a Community Health & Safety plan according to Sindh Occupational Safety and Health Act 2017 while adhering to the ESS2 – Labor and Working Conditions as well as Labour Management Procedure (LMP) and will submit it to the PIU for review and approval. When approved, the contractor will implement the plan during the construction period. This plan will need to 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 also needs to describe what type of training 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 ensure the use of Personal Protective Equipment (PPEs) for his labours during the construction period; OHS Training[4].
- 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;
- Provision of speed breakers at appropriate places in consultation with/approval of the Engineer which should be removed after completion of the project;
- Establish and obey speed limits;
- The Contractor will maintain workers' hygienic conditions in labour camps.
- The Contractor shall make available the first aid kit and bandages at all times 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 without permission of the owner will be used for transportation;
- Drivers will fix the net on containers while transporting stones and sand etc.
- Community liaison will be maintained during the construction stage and GRM will be established to address complaints related to safety hazards.

The contractor will also prepare an emergency response plan to address events such as urban floods, fires, earthquakes, injury/death, and accidents.

6.11 Community Health & Safety

6.11.1 Impacts on the Public due to Project Activities.

The potential impacts shall be direct, such as being struck by moving vehicles within and outside the sub-project area and indirect through the decrease in air quality surrounding the sub-project area. The air quality will reduce as a result of increased dust generated from construction and on transport routes, as well as due to emissions from plants and vehicles. The impact will continue for the duration of the work.

[4] Some of the key areas that may be covered during training as they relate to the primary causes of accidents include (i) slips, trips and falls; (ii) personal protective equipment; (iii) ergonomics, repetitive motion, and manual handling; (iv) workplace transport; and (v) legislation and responsibilities. Training can provide the foundations of competence but it does not necessarily result in a competent worker. Therefore, it is essential to assess staff competence to ensure that the training provided is relevant and effective. Supervision and monitoring arrangements shall be in place to ensure that training has been effective and the worker is competent at their job. The level of supervision and monitoring required is a management decision that shall be based on the risks associated with the job, the level of competence required, the experience of the individual and whether the worker works as part of a team or is a lone worker.

6.11.2 Potential Mitigation Measures.

- Ensure that the site is restricted from the entry of irrelevant people particularly children;
- Timely public notification on planned construction works;
- Seeking cooperation with local educational facilities (school teachers) for road safety campaigns;
- Provision of proper safety and diversion signage, particularly at socially sensitive receptors areas;
- Setting up speed limits in close consultation with the traffic police; and
- During construction work, pedestrian and vehicular passages shall be provided for crossing near the settlement;
- Open trenches and deeply excavated shall be protected by a fence/barricade to avoid any accident.

6.12 Physical/Community Infrastructure

6.12.1 Damage to Physical Infrastructure

The 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.

6.12.2 Mitigations to Physical Infrastructure

Currently, no public infrastructures are observed which creates hindrances in the execution of the work. All damaged/removed infrastructures will be repaired/ restored to their original or better condition. Liaison with the community will be maintained and GRM will be established to address any related complaint.

6.13 Cultural Heritage

There is little likelihood of buried archaeological sites as no archeological or cultural heritage has been identified with a minimum of 500 meters of sub-project area[5].

6.13.1 Chance Find Strategy

The sites or items of heritage significance could be found in the course of 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 to the culture the client is responsible for heritage. It would be ensured that any chance to find further is not disturbed until an assessment by competent professionals is made and actions consistent with the requirements of ESS8 – Cultural Heritage. ESS8 recognizes the importance of cultural heritage as a valuable source of

[5] The 500m setback is based on the average zone of the impact that is expected from the sub-project. However, this distance may vary with the type and level of activity, sensitivity of the area, and probability of impacts.

Subproject is rehabilitation-related work (types and Levels of activity) furthermore sub-project area falls in a rural environment and the probability of the impact is low to negligible as the subproject area is far away from notified cultural heritage sites.

scientific and historical information, as an economic and social asset for development, and as an integral part of people's cultural identity. This standard sets out measures to protect cultural heritage throughout the lifecycle of the project

i. 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.
ii. PIU will intimate to Culture Tourism & Antiquities Department, Govt of Sindh.
iii. Meanwhile, the contractor will cease their operations and due caution will be ensured for archaeological remains.
iv. Archaeology department to inspect, identify, advise management, and recover remains.
v. 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 Archeological Department.

6.14 Labour Influx

6.14.1 Impacts of Labor Employed from Outside

Some social impacts could arise due to labor influx. There shall also be a risk to community health from HIV/AIDS / COVID-19 or other transmitted infections as a result of the presence of migrant construction labour. There could be the risk of gender-based violence from migrant labour, which often remain away from home on the site. This may lead to inappropriate behavior including sexual harassment of women, girls and boys in the local community. This could especially be relevant in case the nearby population is from any marginalized group e.g. Hindu community.

6.14.2 Mitigation Labour Influx

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 contractors shall locate/ construct camps for their staff at least 500 meters away from communities to avoid social conflict as well as to avoid the possible adverse impacts of the construction camps on the surrounding communities. Fencing will be provided around the campsite and the Contractor will provide security. The camp layout plan and workers' code of conduct will be prepared by the contractor and will be submitted for review and approval by the Engineer.

While the contractor shall also include proposals for awareness of HIV/AIDS/COVID-19 and the spread of sexually transmitted diseases in the Contractor's Environmental & Social Management Plan (CESMP) and the training plan. The contractor will train the workers regarding (Gender Based Violence GBV) and also train workers about sexual harassment, child abuse, and human trafficking for reducing the risk of GBV.

6.15 Gender Base Violence (GBV), Sexual Exploitation and Abuse (SEA)/Sexual Harassment (SH)

6.15.1 Impacts related to GBV/SEA/SH

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.

6.15.2 Mitigations related to GBV/SEA/SH

As part of the mitigation strategy, training/orientation sessions will be conducted to sensitize PIU and the Contractor's staff/workers on the importance of addressing GBV/SEA/SH risks at the project level. The contractor will be required to have a written contract with their workers materially consistent with the objective of ESS2, following the 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 PIU.

6.16 Violence Against Child (VAG) & Child Labour

6.16.1 Impacts Related to VAG & Child Labour

The level of risks of VAG & child labor is anticipated on the lower side. Because child labour is not allowed on the sub-project. The work is only offered to the person having CNIC. The Computerized National Identity Card (CNIC) is an identity card issued to any citizen of Pakistan that is 18 years of age or older.

6.16.2 Mitigations Related to VAG & Child Labour

When construction activities involve hazardous work, people under the age of 18 will not be employed on the sub-project. Moreover, for child labour in hazardous work, the minimum age is 18 years and above as specified by the Sindh Prohibition of Employment of Children Act 2017. To confirm that workers below the age of 18 years are not hired to work on the project; workers will need to provide legally recognized documents such as Computerized National Identity Card (CNIC) to verify age. However, if other labor-related risks arise during project implementation, the PIU will develop procedures to prevent other impacts. This will include awareness-raising sessions, which will be conducted regularly in the communities to sensitize on prohibition and the negative impacts of child and forced Labor.

6.17 Human Resource Development

During the construction stage, the local population would get jobs in the form of semi and unskilled labor. The contractor would ensure that unskilled and skilled labour is paid wages as notified by the Government of Sindh. Due to their interaction with skilled labor, their skills would be developed for future development activities of this kind.

6.18 Road safety Risks and Mitigations

The increased vehicular movement and speed may result in road safety issues like traffic accidents. The impacts on road safety would be permanent and moderately negative. They will be mitigated by enforcing speed limits and imposing penalties on traffic violators. Traffic

signs will be provided to facilitate road users about speed limits, turns, speed breakers, informative signage for Socially sensitive receptors, etc.

Warning messages such as “speed thrills but kills” or “better late than never” etc. will also be displayed at appropriate locations and local language to aware drivers of likely accidents due to overspeeding. All the median and sharp bends will be reflectorized to facilitate travelers in the night time.

7. GRIEVANCE REDRESS MECHANISM (GRM)

The following GRM mechanism has been established, which covers activities during project implementation and pre-construction phases:

- A Public Complaints Centre (PCC), is responsible to receive, log, and resolve complaints;
- A Grievance Redress Committee (GRC), is responsible to oversee the functioning of the PCC
- A non-judicial decision-making authority e.g., PIU of SFERP for resolving grievances that cannot be resolved by PCC;
- Grievance Focal Points (GFPs), who will be educated people (preferably) from each community on each sub-project site. The GFPs should be community members who are easily approached by the community. The GFPs will be provided training by the Environment and Social experts of the CSC and PIU, SFERP.

7.1 Public Complaints Centre (PCC)

In its capacity as the Project Implementation Body, the PIU, has already established a Public Complaints Centre (PCC) in the SFERP office. The PIU and the local government bodies will issue public notices to inform the public within the sub-project area of the Grievance Redress Mechanism. The PCC's phone number, fax, address, the email address will be disseminated to the people through displays at the respective sites of sub-projects.

The PCC will be staffed by a full-time officer from the PIU, CSC and contractor. The officer should have experience and/or training in dealing with complaints and mediation of disputes. The PCC officer will have resources and facilities to maintain a complaints database the database should be digitized and available online as well and communicate with the contractor, Site Engineers, and CSC.

The PCC will be responsible to receive, log, and resolve grievances. Given that the female community members have restricted mobility outside of their villages and homes, the female PIU staff will be required to undertake visits to the local communities to record grievances. The frequency of visits will depend on the nature and magnitude of activity in an area and the frequency of grievances.

GRM for workers: At the contractor level, Community Liaison Officer (CLO) would be responsible for managing workers' complaints, while at the PIU level public complaint center (PCC) would be responsible. The following reporting lines will be adopted for resolving workers' grievances.

Contractor level: Community Liaison Officer (CLO) will serve as Grievance Focal Point (GFP) to file the grievances. If the issue is successfully resolved, no further follow-up is required, and the case shall be documented and closed. In case the grievance is unresolved at the contractor level, the workers may directly approach PCC about their grievance. The prominent signage containing the contact details of PCC in the Sindhi language would be displayed at each site.

PIU level: The PCC along with the CSC will investigate the complaint to determine its validity, and identify appropriate corrective measures. If corrective measures are necessary, PCC will instruct the Contractor to take necessary action; the PCC will inform the Complainant of the investigation results and the action taken; the PCC will review the Contractor's response to the identified mitigation measures, and the updated situation; the PCC will undertake additional monitoring, as necessary, to verify as well as review that any valid reason for complaint does not recur. Moreover, monitoring of work-related grievances will be carried out jointly by the CSC and PIU.

7.2 Grievance Redress Committee (GRC)

The GRC functions as an independent body that regulates the grievance redress process. It comprises Environmental and Social Safeguard Specialists of PIU, a Senior Engineer from PIU, a Representative of the District Commissioner's office, and also members from the community/ civil society from sub-project areas. Decisions or findings taken in the Grievance Redress Committee (GRC) would be binding upon the contractor.

7.3 Grievance Focal Points (GFPs)

The GFPs will be men and women from each community who will assist and facilitate the community members in reporting grievances resulting from project activities. The GFPs will be provided training by the PIU/CSC in facilitating grievance redress. The PIU will initiate the process of identifying the GFPs. GFP will be and identified by the relevant community in consultation with the Social Safeguard team of PIU (SFERP), CSC and CLO. The process of complaint receiving, maintaining records and resolving the complaints would remain the same as stated above. The GFP would be responsible to make aware the community of the following components:

- Scope of the project planned construction phases, etc.
- Inform people about their options, depending on the types of complaint, but should not be encouraged to submit false complaints
- Type of GRM available
- Types of grievances not acceptable to the GRM
- Who can access the GRM
- How complaints can be reported to the GRM and to whom, e.g., phone numbers, postal and email addresses, and website and information that should be included in a complaint
- Two GFPs (a female and a male) will be selected for each sub-project.

7.4 Role and Responsibilities of the Public Complaints Centre (PCC)

The responsibilities of the PCC are:

- The PCC is responsible to log the complaint and date of receipt onto the complaint database and inform the CSC and the Contractor;
- The PCC is responsible to instruct Contractors and PISSC to refer any complaints that they have received directly to the PCC. Similarly, the PCC will coordinate with local government to “capture” complaints made directly to them;

- The PCC, with the CSC, is responsible to investigate 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, PCC, through the PCI, will instruct the Contractor to take necessary action;
- The PCC is responsible to inform the Complainant of the investigation results and the action taken;
- If the complaint is transferred from local government agencies, the PCC submits an interim report to local government agencies on the status of the complaint investigation and follow-up action within the time frame assigned by the above agencies;
- The PCC is responsible to review the Contractors' response to the identified mitigation measures and the updated situation;
- The PCC is responsible to undertake additional monitoring, as necessary, to verify as well as review that any valid reason for a complaint does not recur.

During the complaint investigation, the PCC works together with the Contractor and the CSC. If mitigation measures are identified in the investigation, the Contractor promptly carries out the mitigation. CSC is responsible to ensure that the measures are carried out by the Contractor.

7.5 GRM Steps and Timeframe

Procedures and timeframes for the grievance redress process are as follows:

Stage 1: In this stage, the services of the Community Liaison Officer (CLO) of the Contractor will be utilized at the site to register the complaints and grievances in the community. The CLO would maintain the complaint register, while the complaint box installed at the site/camp would be managed by CSC and PIU jointly. The complainant can also directly approach PCC/PIU, as prominent signage containing the contact details of PCC in the Sindhi language would be displayed at all sites. When a grievance arises, the affected person may contact directly the contractor/operator and the project manager to resolve the issue of concern. If the issue is successfully resolved, no further follow-up is required.

The contractor will also formally maintain a record of all complaints and issues raised, through the CLO assigned for each sub-project. The contractor will also display prominent signage containing the contact details of PCC in the Sindhi language.

Stage 2: If no ad hoc solution can be found at stage 1 at the site level, the affected person/s will submit an oral or written complaint to the PCC by themselves or through GRM entry points (the CFP, PIU, CSC, and Contractor). For an oral complaint, the PCC must make a written record. For each complaint, the PCC must investigate the complaint, assess its eligibility, and identify an appropriate solution. It will provide a clear response within five (5) working days to the complainant, PIU, and the Contractor. The PCC will, as necessary, through CSC; instruct the Contractor to take corrective actions. The PCC will review the Contractor’s response and undertake additional monitoring. During the complaint investigation, the PCC will work in close consultation with the Contractors, and the Supervising Engineer (during construction) and with the Works & Service Department (during operation). The contractors during construction and the PIU during operation should implement the redress solution and convey the outcome to the PCC within seven (7) working days;

In addition, the E&S team of CSC and PIU will also encourage oral and written feedback from the community during monitoring visits.

Stage 3: If no solution can be identified by the PCC or if the complainant is not satisfied with the suggested solution under Stage 2, the PCC will organize, within two (2) weeks, a multi-stakeholder meeting under the auspices of the SFERP, where all relevant stakeholders (i.e., the complainant, PIU, contractor/operator, relevant local government offices) will be invited. The meeting should result in a solution acceptable to all, and identify responsibilities and an action plan. The contractors during construction and the PIU during operation should implement the agreed-upon redress solution and convey the outcome to the PCC within seven (7) working days;

Stage 4: If the multi-stakeholder hearing process is not successful, the PCC will inform Project Steering Committee (PSC) and the PSC or Secretary will organize a special meeting to address the problem and identify a solution; and

Stage 5: If the affected people are still not satisfied with the reply in Stage 4, he or they can go through local judicial proceedings.

7.6 Reporting

The PCC will record the complaint, investigation, and subsequent actions and results in the monthly Environmental Management and Monitoring reports. In the construction period and the initial operational period covered by loan covenants, the PIU will periodically report progress to the World Bank, and this will include reporting complaints and their resolution. The tracking and documenting of grievance resolutions within the PCC and/or PIU will include the following elements:

(i) tracking forms and procedures for gathering information from project personnel and complainant(s);
(ii) 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 PCC reports into the monthly ESMP Compliance monitoring report to the World Bank.

7.6.1 Role of Contractor in GRM Complaints Register

The Contractor will maintain a complaint register at the campsite office to document all complaints received from the local communities. The register will also record the measures taken to mitigate these concerns. The final report regarding complaint closing will be communicated to CSC. The PIU shall carry out the monitoring of the implementation of measures for the eradication of complaints.

8. ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

8.1 Objectives

The purpose of the Environmental and Social Management and Monitoring Plan for the rehabilitation works is to ensure that all necessary identified measures have been adopted to protect the environment and social situations and to comply with the country's environmental and social legislation and applicable World Bank standards. After the preparation of ESMF, PIU has outlined site-specific ESMP for the Contractors and executing agency.

8.2 Institutional Arrangements

8.2.1 Project Management Responsibilities

Implementation of the ESMP will be a contractual obligation between the Contractor and the Project Implementation Unit (PIU), SFERP. The Contractor shall engage full-time technical staff capable of carrying out the monitoring activities as proposed in the ESMP as contractual obligations under the contract agreement.

Environmental and Social Team – PIU will carry out monitoring activities related to the project during the construction phase by using checklists and notify the Contractor of any violations of the ESMP, check the progress reports, advise the client and contractor regarding any violations which require further action and maintain a record of events and surveys for reference.

The overall responsibility for the SFERP project as well as the Environmental and Social Team will rest with the PIU. Besides, the PIU will be supported during ESMP implementation by E&S team to be established within PIU respectively.

8.2.2 Project Implementation Unit (PIU)

The overall responsibility for the supervision of ESMP will rest with the PIU under SFERP will act as the apex body of the project to take care of Social/Gender, 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/Resettlement Specialist and Gender Specialist

The E&S Team shall be responsible for the supervision of implementing and monitoring the ESMMP 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 – IV must be included in the contract/s.

8.2.3 Contractor Responsibilities

The Contractor will be responsible for the on-field implementation of the ESMP as well as maintaining responsibility for environmental protection liabilities under Sindh Environmental Protection Act (SEPA), 2014, World Bank ESF 2018, ESMF of SFERP, Stakeholder Engagement Plan (SEP-SFERP) Labour Management Procedures (LMP) for SFERP,

Contractor's code of conduct as mentioned in the ESMF and other applicable national as well as provincial policies and regulations. Besides, the contractor has to be comply with the suggested measure as annexed in Annexure – IV.

Furthermore, the contractor has to be filled the particulars of employment which have been given in Annexure – V. 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 include:

Environmental Coordinator(s); Occupational Health and Safety (OHS) Officers; and Community Liaison Officers.

8.3 Environmental Code of Practices (ECOPs)

The objective of the preparation of the Environmental Code of Practices (ECOPs) is to address less significant environmental impacts and all general construction-related impacts for the proposed SFERP sub-project implementation. The ECOPs will provide guidelines for best-operating practices and environmental management guidelines to be followed by the contractors for sustainable management of all environmental issues. This ECOP will be annexed to the general conditions of all the contracts to be carried out under the SFERP project. Detailed E.CoPs can be obtained from the website[6]**.**

8.4 Contractor's Plans

This Environmental and Social Management Plan (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 plans before mobilization and implement the plans described below with the help of mitigation measures. Once approved by the CSC Environment Specialist & PIU, these documents will become part of the Site-Specific Environmental Management Plan -SSEMP for the Contract.

8.4.1 Stakeholder Engagement Plan - SFERP

The contractor shall prepare the SEP-specific for the sub-project under the guidelines of SEP or SFERP as well as ESS10 – Stakeholder Engagement and Disclosure. The SEP outlines ways in which the PIU will communicate with stakeholders and includes a mechanism by which people can raise concerns, provide feedback, or make complaints about project activities. The plan shall also ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible, and appropriate manner and format.

8.4.2 Labour Management Plan

The contractor shall be prepared and get approval from PIU for the LMP and its implementation. The LMP Shall draft under the guidelines of Labour Management procedure,

[6] https://documents1.worldbank.org/curated/en/249991468024570005/pdf/E40110V70REVIS00disclosed0100260120.pdf

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).

8.4.3 Camp Management Plan

The contractor camp management shall provide all details of social facilities, including dormitories, washrooms for labor, cooking areas, dining facilities, prayer areas, septic tanks, drinking water, and other necessary facilities.

8.4.4 Corona Virus Management Plan (COVID-19)

The contractor shall provide the details of prevention measures, and arrangements planned for the Management of COVID-19. The Plan shall include the details of the designated quarantine area, disinfection facilities for Vehicles, and inventory arriving on site. The plan shall also include necessary supplies, such as facemasks, soap, hand sanitizers, temperature-monitoring infrared guns, etc. Disposal of COVID-19-related waste plans should also be prepared.

8.4.5 Pollution (air, land, and water) Control Plan

The Contractor shall provide details of the principal pollution control facilities proposed and of contingency plans in the event of failure of these facilities. The contractor must follow ESS3 – Resource Efficiency and Pollution Prevention and Management while formulating the plan before the start of civil work.

The plan shall include the details of the designated and licensed tip, oil treatment facilities and hazardous waste disposal sites that shall be used to dispose of waste. The plan shall also include Environmental effects monitoring.

8.4.6 Waste Management Plan

The Contractor shall include details of the procedures for the collection and disposal of wastes. The Plan shall deal with each waste stream separately. WMP will be prepared and implemented by the Contractor based on ECoPs 1, 2, 4 & 10 and WBG EHS Guidelines (2007), as well as the mitigation plans given in the report. The Plan will include the camp layout, and details of various facilities including supplies, storage, and disposal.

8.4.7 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).

8.4.8 Plan for Handling of Hazardous Materials

The Contractor shall identify control measures to ensure no environmental or health impacts from the handling of hazardous materials and the collection and safe disposal of hazardous materials (this may be included within the Pollution Control Plan).

8.4.9 Occupational Health and Safety

Upon mobilization, the Contractor shall prepare an Occupational Health and Safety Plan following ESS4 – Community Health and Safety & Sindh Occupational Safety and Health act 2017, which shall be relevant to his chosen methodology. This plan shall detail the following:

- 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.

8.4.10 Environmental and Social Awareness Training Plan

This shall include details of the Contractor's environmental and social awareness training program proposed for the workforce. Details are given in Table – 17 given below.

8.4.11 Emergency Response Plan

The contractor will prepare an emergency plan to address emergencies/events such as 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.)

8.4.12 Tree Plantation and Maintenance Plan

The Contractor is required to prepare an inventory of the trees to be cut/uprooted/shifted before the commencement of the physical works in presence of PIU staff, submit a detailed tree plantation plan, and define the proposed plantation methodology, species and plantation locations. Sindh Forest Department, the PIU shall approve the plantation location. All trees to be planted shall be of native species as they have more chances of survival and plantation of invasive species shall be prohibited. The Contractor shall be responsible for the aftercare of the saplings/plantation for one year.

Table 17: Environmental and Social Awareness Training Plan

Areas of Training	Key Aspects to be Covered	Target Group	Frequency	Budget.
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.** COVID-19 Management and Monitoring **i.** Safety measures for COVID-19 **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.	PIU, Contractor staff as well as relevant communities.	Before project/physical works commencement, during construction and after construction.	A total of eleven types of training for the proposed sub-project is to be conducted.

8.5 Compliance and Effects Monitoring

PIU shall carry out monitoring within the sub-project area using the monitoring checklists to be prepared based on this mitigation and monitoring plan to aid the monitoring process, the Contractor will complete the following:

- Train construction staff for the implementation of the ESMP and safety measures.
- Submit various progress reports to the Environmental and Social Specialists of PIU.
- Explain the implementation of various environmental aspects to visiting national and international agencies and representatives of the donor.
- Receive monitoring reports/notes issued and take action to mitigate various violations of ESMP.
- Regularly submit Reports to PIU Environment Specialists about compliance with the ESMP and various issues related to the HSE including but not limited to the following:
- OHS Measures adopted (OHS statistics)
- Fuel and hazardous material consumption
- Workforce statistics (employment/deployment etc.)
- Compliance monitoring to check whether the actions proposed in the ESMMP are being carried out.
- Effects monitoring to record the impacts of mitigation measures adopted on the biophysical and social environment; as applicable, these effects are repeatedly measured.

E&S team – PIU, will complete compliance monitoring. The effects monitoring shall be the responsibility of CSC. Examples of compliance and effects monitoring parameters are

included in the Box below. Both approaches will be conducted using the monitoring parameters by visual observation, photographic documentation, and measurement where necessary. A record of events and surveys will be maintained.

8.6 Environmental Non-compliances and Corrective Measures

The Contractor will be notified of any violations of the ESMP, as well as any corrective actions required. Outlined below are some steps, relating to the increasing severity of environmental problems, which will be implemented. The principle is to keep as many issues within the first few steps as possible.

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

Step 2. A more serious infringement is observed and PIU notifies 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. PIU shall order the Contractor to suspend part, or all, of the works. 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.

8.7 Communication Reporting and Documentation

The following environmental meetings are proposed:

- Primary meetings between the E & S team of PIU and the Contractor for setting out the format for the regular meetings shall be held before the commencement of the project.
- Scheduled Environmental and Social Progress Review Meeting (ESRPM) meetings between the team PIU and the Contractor shall be done every regular intervals.

The purpose of the meetings is to discuss the conduct of the operation, non–compliances noted by the environmental and social teams and measures recommended for their remedy.
The Contractor and PIU will produce monthly, quarterly and work completion reports of the sub-projects based on social and environmental issues. The distribution of the reports shall be to PIU and World Bank.

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);
- Plantation of saplings of new trees against trees cut
- Survival rate of saplings of new trees
- 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 planed 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 labour and disproportionate wages
- Conflict at community level
- Chance find archaeological site
- Grievance redressal mechanism is in place
- Health screening of labour at site
- Contractor's staff sensitized on Gender base violence (GBV)

A photographic record of the project area shall be kept. The contractor, E&S-PIU will take photographs at key locations using a digital camera of the project area in a walkthrough survey the following data shall be recorded for each photograph:

- Shot 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 will maintain a complaint register at the campsite and workplaces to document all complaints received from the local communities. The register will also record the measures taken to mitigate the reported concerns. The final report will be communicated to the E&S team of PIU. All complaints/issues of the community will be reported in the monthly progress report of the following month along with the status of the last month's complaints and will be reviewed by the E&S team of PIU.

Moreover, telephone numbers and addresses of all concerned tiers within the GRM would be displayed in Sindhi and Urdu at all sites, and the same would be distributed in community training/meetings.

Complaints Register Ties in with the Project GRM

The stakeholder's or affected people's concerns, complaints and grievances about sub-the project's environmental & social performance will be received, recorded and replied to in a systematic way using an understandable and transparent process that is gender-responsive, culturally appropriate and readily accessible to all segments of the affected people at no cost and without retribution.

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 ESMP 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.

8.8 Environmental and Social Management and Monitoring Cost

The implementation of the ESMP involves inputs from Construction Contractor (CC), CSC and PIU. The CC will be primarily responsible for ensuring the implementation of mitigation measures proposed in the ESMP, which will be part of the contract documents. Hence, the provision of environmental mitigation cost as a separate head in Bill of Quantities (BOQs) will be made mandatory in contract documents.

However, if the CC fails to comply with the implementation of ESMP and reporting properly, the proponent will enforce compliance with the terms of the contract, including adherence to the ESMP and WB ESS 2018. For the smooth execution of ESMP implementation activities, it has been recommended that all the bills/payments related to EMP implementation will be approved/authenticated by the CSC Env & Social. ESMP implementation cost will be deducted from Interim Payment Certificates (IPC) until compliance has been done.

The cost of Rs. 7,094,000/- budget for the implementation of the ESMP has been allocated The breakup of the cost is given in Table 18.

Table 18: Cost of Environmental &Social Management and Monitoring Cost

Item No.	Item	Rational	Frequency	Average Rate (Rs.)/unit*	Quantity/ year	no of units	Total Quantity	Estimated Amount (Rs.)
A. Baseline Environmental Monitoring Before Start of Civil Works								
1	Surface Water	Construction near water body/one each from roads no 1, 4, 6, 7, 8, 10, 13, 16	Once Before Start of Civil Works	15,000	1	8	8	120,000
2	Drinking Water	one from camp area and other from road no. 1, 4, 7, 13, 16 due to presence of settlements near to subproject area		15,000	1	6	6	90,000
3	Ambient Air from Batching/Asphalt plant area	One from the proposed camp area, one each from roads no 1, 4, 7, 13, 16		20,000	1	6	6	120,000
4	Ambient Noise	2 from each road/nearby sensitive receptor		1,000	1	16	16	16,000
							Sub Total - A	**346,000**
B. Environmental Monitoring Cost During Construction Phase (12 months)								
5	Surface Water	Construction near water body/one each from roads no 1, 4, 8,10, 13, 16	Once every in four months	15,000	3	6	18	270,000
6	Drinking Water	one from camp area and other from road no. 1, 4, 7, 13, 16 due to presence of settlements near to subproject area		15,000	3	6	18	270,000
7	Ambient Air from Batching/Asphalt plant area	One from the camp area & other from road 1, 7, 16 due to presence of socially sensitive receptors		20,000	3	4	12	240,000
8	Ambient Noise	2 from each road/nearby sensitive receptors/as per community demand		1,000	3	16	48	48,000
9	Machinery/Stack emissions	Lump sum - depending upon machinery used for construction activities						200,000
							Sub Total - B	**1,028,000**
C. EHS Management								
10	Personal Protective Equipment		Bi annual	5,000	2	50	100	500,000
11	Fire Fighting Equipment purchase and refilling						Lump sum	100,000
12	Soft and Hard Landscaping - Plantation Plan						Lump sum	100,000
							Sub Total - C	**700,000**
D. EHS Administrative Cost								
13	Training/Capacity Building		50 persons	2,000	2	1	100	200,000
14	Social Expert (for social compliance & GRM implementation) Salary			120,000	12	1	12	1,440,000
15	GRM running & General Community support needs (if any)						Lump sum	500,000
16	Environmental & OHS Officer Salaries (120 thousand for each person)			120,000	12	2	24	2,880,000
							Sub Total - D	**5,020,000**
							TOTAL OF (A TO D)	**7,094,000**

Table 19: Environmental & Social Management Plan

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	Slope Instability	Excavated Material Disposal Plan to include a siting 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	Baseline Environmental Monitoring	As per the monitoring plan given in ESMP before the start of the civil works as per SEQS	CC	CSC	Compliance to ESMP	Once before the start of the works	Sub-project areas
		A.1.1.4	Geology and seismology	Stone pitching of the degraded reaches	PIU	SFERP	Emergency Preparedness Plan in place before the commencement of construction.	Once at the end of the design stage	SFERP Office
		A.1.1.5	Public Consultations in rural semi-urban areas	Stakeholder Engagement Plan (SEP) has been prepared for the SFERP and will be implemented in the sub-project. Stakeholder consultations will be conducted throughout the project implementation. Full-time CSC Social Expert will be engaged for the proposed project. The CSC Social Expert will	CC	PIU	Implementation of SEP	Once at the end of the design stage	Sub-project areas

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				exchange rehabilitation work to roadside landowners, the period of access restriction, and the measures taken to allow movement around the construction work					
		A.1.1.6	Loss of flora and disturbance of fauna within CoI	Tree inventory has been prepared and avoidance of tree cutting to the possible extent is recommended	PIU	SFERP	Tree inventory prepared	Once at the end of the design stage	Same as above
B. CONSTRUCTION PHASE									
B.1. Site Preparation and Clearance									
B.1.1	Site preparation	B.1.1.1	Top Soil Erosion	PIU will prepare earthworks the checklist that defines the contractor, and limits to the excavation during road rehabilitation. Instructions for topsoil management will also be defined, including the removal and storage of all topsoil to be used in landscaping, once the road work is completed. The use of soil from private land will be minimized and only after consultation with and compensation of landowners.	CC	PIU & CSC	Approved Plans and comply with ESS1	During the Planning phase, in parallel with the preparation of bid documents	At any locations where borrow pits, and quarries will be operated.
				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
				use of existing accessing tracks	CC	PIU & CSC	No tree-cutting on temporary haul routes	Weekly	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	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 waste management plan the Plan shall deal with each waste stream separately	CC	PIU & CSC	Comply with approved WMP as per ESS1 – Assessment and Management of Environmental and Social Risks and Impacts, ESS3 – Resource Efficiency and Pollution Prevention and Management & ECPs 1, 2, 4 & 10 and WBG EHS Guidelines (2007). Community complaints; Monitoring record	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. The affected communities will carry out on-demand noise monitoring in case of any complaint or request. 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
		B.1.2.3	Damage to existing infrastructure Need to relocate infrastructure	Currently, no public infrastructure is observed which creates hindrances in the execution of the work. All damaged/removed	CC	PIU & CSC		Monthly	Along the alignment

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
			such as electricity transmission lines	infrastructures will be repaired/ restored to their original or better condition. Community liaison to be maintained.					
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	Once	Campsite
			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. As per ECoP 3:	Once before camp establishment.	Same as above
			Surface water pollution	Locate camps away from the waterbody, canal, watercourses, 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 is not using public water resources	Monthly	Along the alignment
		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	B.2.3.1	Construction of impermeable layer	Suitable latrines (septic tanks etc.) and washing facilities are provided in the camps	CC	PIU & CSC	Latrines are provided at each camp	Once	Construction Camp
				Lined washing facilities including a shower, are available near each latrine, including clean running water,	CC	PIU & CSC	Suitable washing facilities are provided at each camp	Once	Same as above

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				soap and drying facilities.					
	Diversion of Water channels/water course	B.2.3.2	Inadequate diversion of canal/water course will affect the 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	adequate-sized diversion	Monthly	Along the alignment
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 Plan as per ECoP 10: Construction Camp Management	Once	All active work sites
				Emergency Response Plan to man-made and natural disasters (including rains, urban floods, fire, etc.)	CC	PIU & CSC	Annual evacuation drill	Quarterly	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	Fire extinguishers 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	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	Once	

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				The contractor shall provide all staff with Identity Cards showing their association with the project	CC	PIU & CSC		Monthly	All active work sites
				Sindh-speaking staff 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 Plan, a procedure for emergency evacuation of camp and practice this procedure	CC	PIU & CSC	Plan submitted and approved	Once	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	Temporary facilities are removed on completion of works	Once	Same as above
B.3. Storage of Material									
B.3.1	Stockpile Storage of 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 for Handling of Hazardous Materials while adhering ECP2	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

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				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	PPEs used	Monthly	
		B.3.2.3	Health and Safety and Pollution	An oil-designated storage area used	CC	PIU & CSC	Stockpiles only in storage areas identified in the camp layout plan	Monthly	Sub-Project area
				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 submitted	Once	
		B.4.1.2	Use of municipal system which falls below SEQS standards	Only the government-approved system to be approved	CC	PIU & CSC	The government-approved system used	Once	
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	CC	PIU & CSC	License or Written agreement b/w Municipal operator and Contractor checked.	Monthly	Licensed site.

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				written agreement shall be made between the Municipal operator and contractor for the disposal of domestic waste.					
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.	Monthly	Collection point
B.4.5	Disposal of hazardous wastes	B.4.5.1	Ground, groundwater and surface water pollution, health and safety	Hazardous wastes are to be passed to licensed contractors, or, available wastes are to be stored in long-term storage facilities meeting the requirement of hazardous material storage area to be taken on client following construction. Details are to be provided in the pollution plan to the Engineer.	CC	PIU & CSC	As per approval of the Plan and guidelines set by ECoP 1: Waste Management. ECoP 2: Fuels and Hazardous Substances Management to meet the ESS1 & 3	Once	Collection point
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	Once	Sub-Project area
B.5. Construction Plant and Vehicles									
B.5.1	Movement/ operation of vehicles on site	B.5.1.1	Air pollution	All vehicles are regular services as per manufacturers' requirements	CC	PIU & CSC	Black smoke was not observed emitting from Vehicles/plant	Quarterly	Sub-Project area

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
		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 in 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 were observed from the plant/vehicle		Sub-Project area
		B.5.1.3	Safety of the community, other road users, fauna and staff	Vehicle speed is limited to 15km/hr.	CC	PIU & CSC	Submittal and approval of the plan	Once	
				Safe driving practices included in Contractor's training plan	CC	PIU & CSC	Training as per the approved plan	Monthly	Sub-Project area
				Flag persons to be provided where plant cross/meet the village road	CC	PIU & CSC	Flag persons provided	Monthly	Road approaching and crossing
				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 in the project area
				Vehicles with restricted rear visibility to be fitted with an audible backup alarm or provided with banks men	CC	PIU & CSC	Back-up alarms or banks men provided	Monthly	Project area
				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
			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	Monthly	Settlement in the project

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
							settlement		area
			Disturbance of Fauna	Biodiversity monitoring of impacts on fauna	CC	PIU & CSC	Status and behavior of terrestrial and avian-fauna	Quarterly	Sub-Project area
			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 as per ECoP 9: Road Transport and Road Traffic Management to aggress ESS 4	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
				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 plant cross/meet the village road.	CC	PIU & CSC	Flag persons provided	Weekly	At road partial closure

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				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 in the 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 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 labours 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	CC	PIU & CSC	Submittal and approval of Labour Management plan as per the guidelines provided in Labour Management Procedure of SFERP to comply with the ESS 2. The number of reported accidents. The number of reported near-misses. Non-compliance observed. Community complaints.	Regularly	Sub-Project area

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				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 contractor will submit an accident report to the Engineer following an accident on site. The report must detail actions to be taken to reduce the risk of occurrence	CC	PIU & CSC	Submittal of the accident report	Monthly	Same as above
				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-aider on-site Contractor to have the on-call doctor	CC	PIU & CSC	On-site Presence of qualified Doctor	Monthly	Same as above
				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 regularly restocked	Monthly	Same as above
B.7 Rehabilitation of rain-affected roads/ Works									

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
B.7.1	Rehabilitation works along water body/water crossing structures	B.7.1.1	Flooding	Prefer given not to work during rainy seasons Provide alternative drainage for rainwater if earthworks fill established drainage lines	CC	PIU & CSC	alternative drainage is provided	Monthly	Same as above
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 the 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 the private land	Monthly	Same as above
				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 area
		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

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
		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	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		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		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 ECoP 11: Cultural and Religious Issues. All works excluded from the identified locations	Monthly	Sub-Project area
				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 informed of the discovery of unidentified cultural or religious sites	Monthly	Same as above
				Community liaison to be maintained. GRM to be established to address related	CC	PIU & CSC	Number of complaints	regularly	Same as above

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				complaints.					
B9. Safety/Health Measures for The Local Population									
B 9.1	The local population living within/near the sub-project especially women, children and elderly people	B 9.1.1	Accident risks, particularly for the local population living within/near the subproject especially women, children and elderly people; Public awareness campaigns through displaying signboards at site and haulage routes; Vulnerability to accidents; Deterioration of health due to dust	Restriction on movement of machinery on the designated haulage routes for transportation of materials. Public awareness campaigns through displaying signboards at the site and haulage routes. Interaction with the community; Setting up speed limits (not more than 15 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. (ECoP 12) **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	CC	PIU & CSC	Number of complaints to ensure compliance with ESS4 – Community Health and Safety	regularly	Same as above

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
				workers. •Raise awareness among the communities of the potential risks of GBV, SEA, and SH and establish links with response services in the nearby communities that can respond to instances of GBV (particularly those related to issues of labour 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. •Development and implementation of grievance redress/stakeholder response mechanism procedures to ensure timely handling of grievances.					
C. OPERATION PHASE									
C.1	Maintenance of rehabilitation facilities	C.1.1	Road Safety	Road maintenance will be carried out as per the contract agreement. During maintenance follow road safety rules and regulations to avoid any accidents.	SFERP/ W&S Deptt	Third-party	No incident of any damges	Continues	Entire project area

Sr. No.	Project Activities	Section	Environmental Impacts/Entity	Mitigation Measures	Responsibility		Key Performance Indicators	Monitoring Frequency	Location
					Execution	Monitoring			
C.2	Increased Traffic	C.2.1	Air pollution and Greenhouse gases	Regular motioning of the vehicles for engine efficiency and avoid any unnecessary work and transportation. Alternative energy resources should be considered where possible. SEQs applicable to gaseous emissions generated by construction vehicles, equipment and machinery should be enforced during construction works.	SEPA/ SFERP/ W&S Deptt	Third-party	Compliance with SEQS	Once in year	Entire project area
				Reduction in travel time and better mode and frequency of transport and enhanced tourism activities in the area which in many terms will boost the local economy and improve the lifestyle of local people. Access to quality health care facilities, educational and other infrastructural facilities. A better investment climate for industries creates more employment opportunities for local people.					

Table 20: Environmental Monitoring Plan

Sr. No.	Parameters	Means of Monitoring	Frequency	Responsibility	
				Implementation	Supervision
1	Vegetation clearance	Visual inspection of loss of vegetation, soil erosion & instability, surface water pollution and occupational health of workers and community	Weekly	CC	CSC/PIU-SFERP

Sr. No.	Parameters	Means of Monitoring	Frequency	Responsibility	
				Implementation	Supervision
2	Top Soil	Visual inspection of topsoil of 20 cm to 30 cm depth should be excavated and stored properly	Beginning of earthworks	CC	CSC/PIU-SFERP
3	Erosion	Visual inspection of the occurrence of erosion and erosion prevention measures	At the end of the filling activity	CC	CSC/PIU-SFERP
4	Operation of burrow and quarry site	Visual inspections of quarry sites/ burrow areas for change in landscape and creation of water ponds.	Monthly	CC	CSC/PIU-SFERP
5	Excavation of earth	Visual inspection for soil erosion & stability	Weekly	CC	CSC/PIU-SFERP
6	Material supply	Inspection of possession of official approval or valid operating license of suppliers' materials (asphalt, cement, quarry and burrow material)	Before the agreement for the supply of material	CC	CSC/PIU-SFERP
7	Storage and handling of materials	Visual inspection of storage facilities	Monthly	CC	CSC/PIU-SFERP
8	Local roads	Visual inspection to ensure local roads are not damaged	Monthly	CC	CSC/PIU-SFERP
9	Traffic safety	Visual inspection to see whether proper traffic signs are placed and safety barriers for traffic management are occupied	Monthly	CC	CSC/PIU-SFERP
10.	Air Quality	Air quality monitoring mobile lab (Certified laboratory from the relevant agency)	Quarterly	CC	CSC/PIU-SFERP
		Visual inspection to ensure water sprinkling is being implemented	Daily	CC	CSC/PIU-SFERP
		Visual inspection to ensure asphalt plant is located greater than 500 m from residential/settlement areas	Monthly	CC	CSC/PIU-SFERP
10	Air quality & noise	Certified laboratory from the relevant agency	Quarterly	CC	CSC/PIU-SFERP
11	Surface & groundwater quality	Sampling and analysis of surface water quality (Certified laboratory from the relevant agency)	Quarterly	CC	CSC/PIU-SFERP

Sr. No.	Parameters	Means of Monitoring	Frequency	Responsibility	
				Implementation	Supervision
12	Solid waste	The visual inspection that solid waste is disposed of at the designated site	Weekly	CC	CSC/PIU-SFERP
13	Floral and faunal monitoring	Visual inspection	Daily	CC	CSC/PIU-SFERP
14	Cultural and archeological sites	Visual inspection	Daily	CC	CSC/PIU-SFERP
15	Visual check for exhaust emissions from equipment and vehicles	Visual inspection	Daily	CC	CSC/PIU-SFERP
16	Grievances of the local communities	Visual inspection	Daily	CC	CSC/PIU-SFERP
17	Reinstatement of work site	Visual Inspection	After completion of all works	CC	CSC/PIU-SFERP

Annexure I: Rehabilitation of Road-SFERP Screening Checklist

SINDH FLOOD EMERGENCY REHABILITATION PROJECT
REHABLITATION OF RAIN/FLOOD AFFECTD ROADS

Environmental and Social Screening Checklist

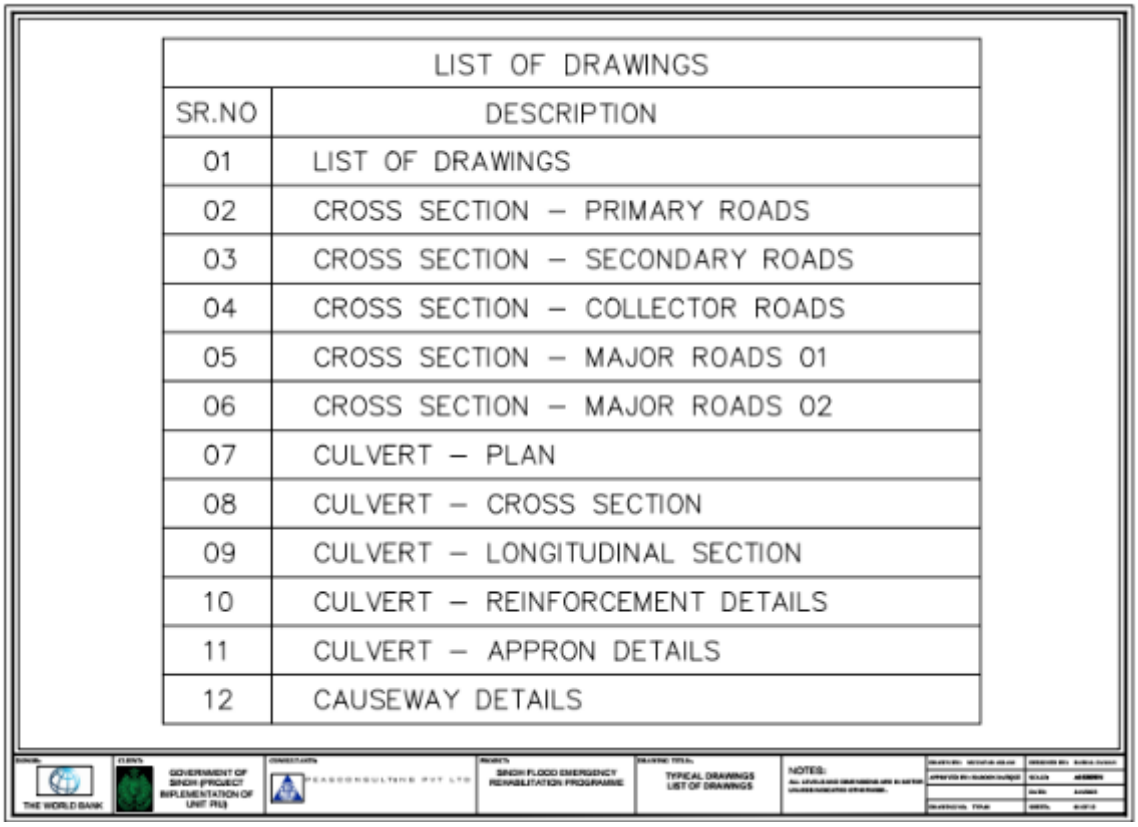
Proposed Project Interventions Details			
Name of proposed project interventions			
ID of proposed project interventions			
Proposed project interventions location			
Proposed project interventions Tehsil			
Village/Town Name at Start & End Point			
Proposed date of commencement			
Screening Question	***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?			
Will the proposed project interventions pose a risk of **contaminating drinking water sources** due to construction activities?			
Will the proposed project interventions **deplete groundwater** because of the water used during road construction activities?			
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?			
Will the proposed project interventions result in an increase in **ambient noise levels** and vibrations due to the operation of construction machinery/vehicles?			
Will these ambient noise levels be beyond the specifications in the **SEQS**?			
Will the proposed project interventions lead to **erosion hazards**?			
Will the proposed project interventions lead to increased **soil erosion?**			
Will the proposed project interventions result in the generation of **hazardous and/or non-hazardous waste**?			
Will the proposed project interventions result in potentially increased health risks for **project workers and communities** (e.g. COVID-19)?			
Is the proposed project interventions being implemented in an area with **high natural hazard risk**? (e.g. floods, earthquakes, landslides)			
ECOLOGICAL ENVIRONMENT			
Will the proposed project interventions potentially cause any adverse impacts on **habitats, ecosystems**, and/or ecosystem services?			
Will any rehabilitation & improvement works be located in areas that would promote the **conversion of natural habitats**?			
Will any proposed project interventions be located **on or near sensitive environmental areas**, including national parks and protected areas?			

Are the proposed project interventions activities likely to pose risks to any **endangered species?**			
SOCIAL ENVIRONMENT			
Will the proposed project interventions involve **land acquisition**?			
Are there any **forced labor or child labor** risks associated with contractors or other third parties involved in implementing this proposed project intervention?			
Is labor influx expected during the implementation of the proposed project interventions? Please estimate the strength of the anticipated **outside labor force.**			
Will local labor be used for the proposed project intervention activities? Please estimate the strength of the anticipated local labor force.			
Will there be any **temporary or permanent displacement** as a result of the proposed project intervention activities?			
Are there expected to be any **traffic-related issues** as a result of the proposed project intervention activities, particularly during the construction phase?			
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**?			
Are the proposed project interventions likely to have **impacts on important religious/cultural heritage sites**?			
Have there been any past **security-related issues** at the proposed project intervention site?			
Has **stakeholder engagement** taken place in the proposed project interventions area?			
Were **vulnerable and indigenous groups** involved in stakeholder consultations? (e.g. women, minorities, economically disadvantaged individuals, etc.)			

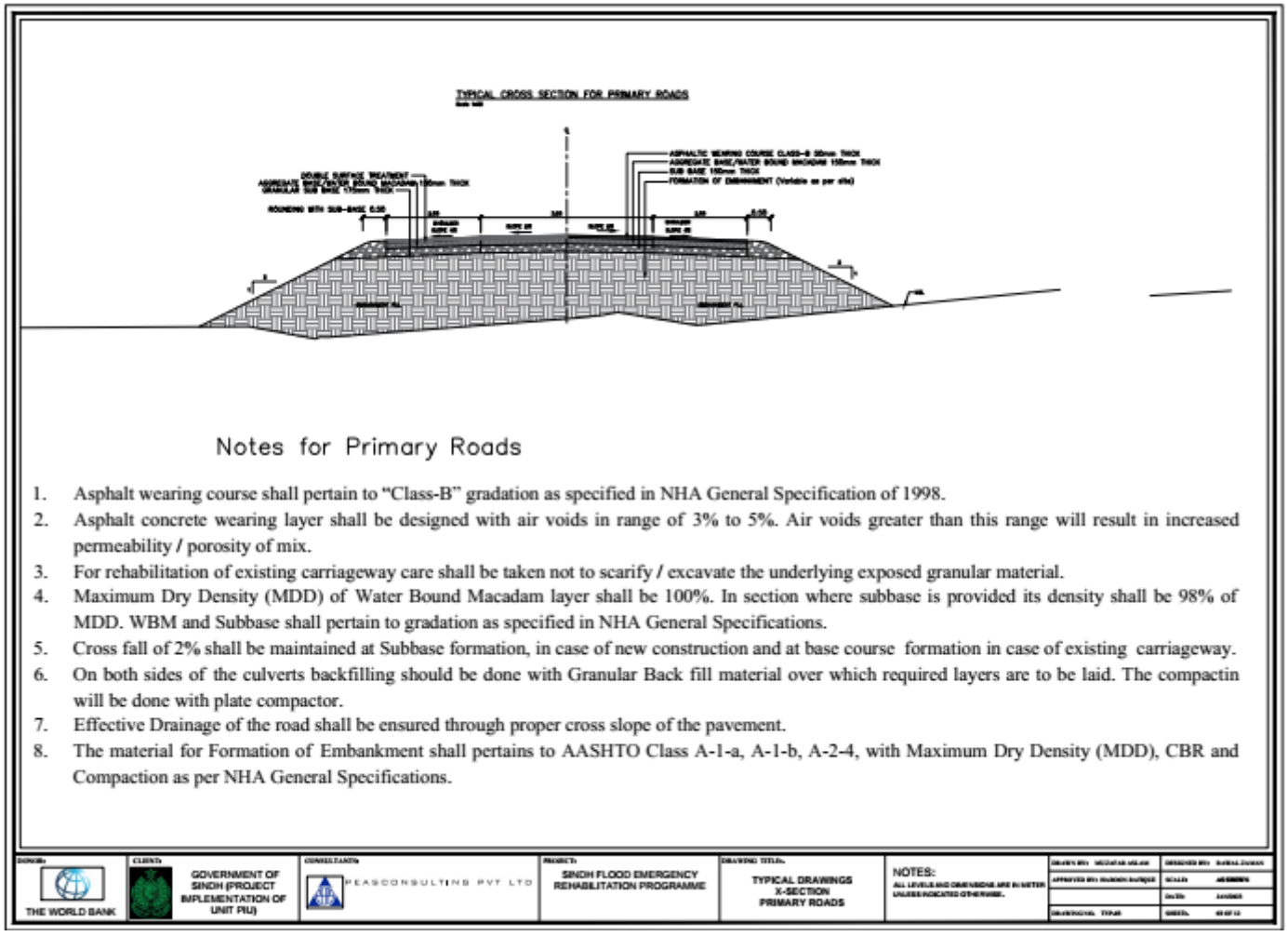
RISK CLASSIFICATION

Step	**Recommendations/Findings**
Risk category identification	
Recommendation on type of E&S instruments required.	
Recommendations to the design engineer	
Summary of screening findings	
Name of person conducting screening	
Name of the person endorsing screening findings	

Annexure II: Typical Cross Sections of Sub-Project

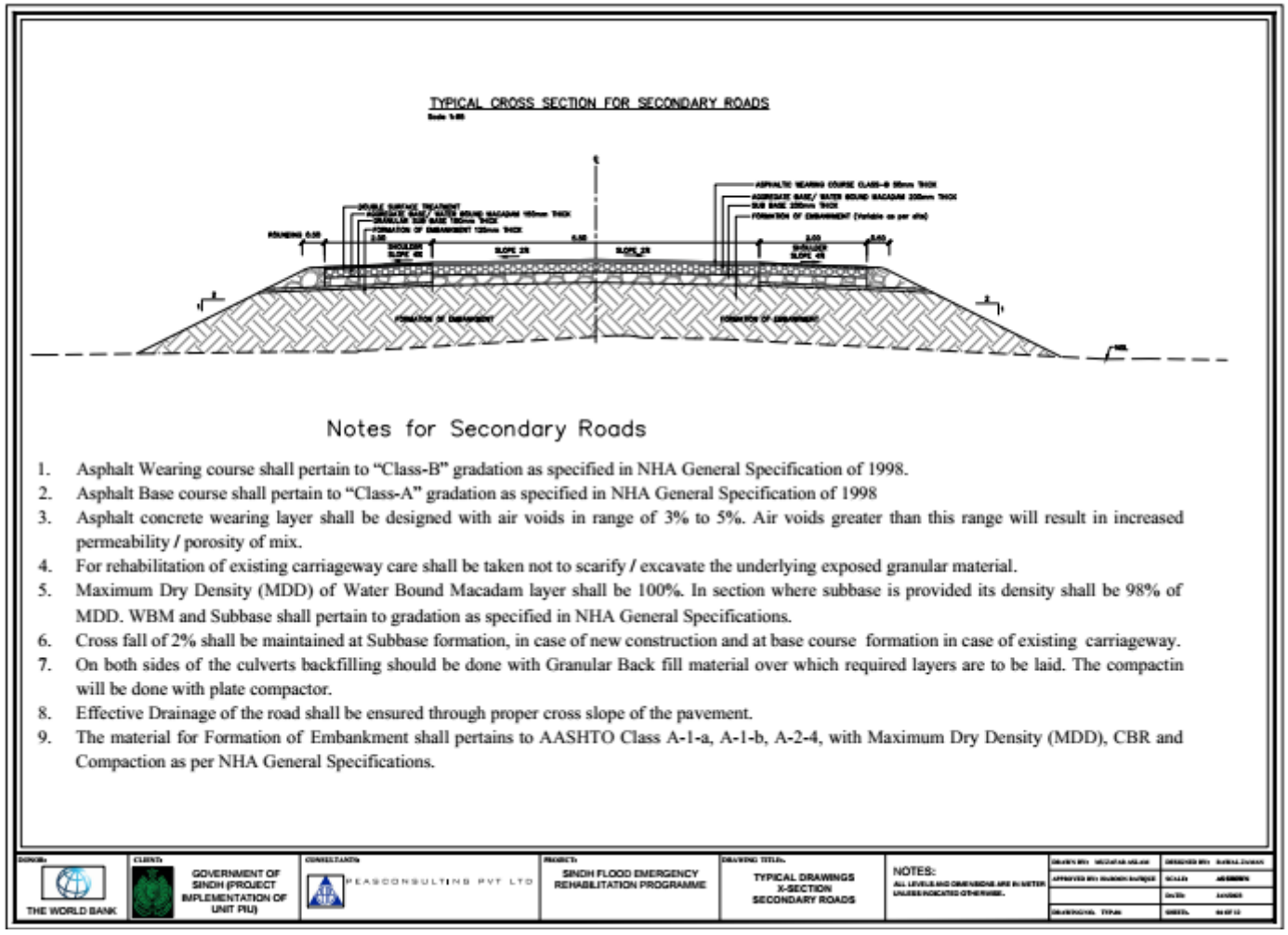


LIST OF DRAWINGS	
SR.NO	DESCRIPTION
01	LIST OF DRAWINGS
02	CROSS SECTION – PRIMARY ROADS
03	CROSS SECTION – SECONDARY ROADS
04	CROSS SECTION – COLLECTOR ROADS
05	CROSS SECTION – MAJOR ROADS 01
06	CROSS SECTION – MAJOR ROADS 02
07	CULVERT – PLAN
08	CULVERT – CROSS SECTION
09	CULVERT – LONGITUDINAL SECTION
10	CULVERT – REINFORCEMENT DETAILS
11	CULVERT – APPRON DETAILS
12	CAUSEWAY DETAILS



Notes for Primary Roads

1. Asphalt wearing course shall pertain to "Class-B" gradation as specified in NHA General Specification of 1998.
2. Asphalt concrete wearing layer shall be designed with air voids in range of 3% to 5%. Air voids greater than this range will result in increased permeability / porosity of mix.
3. For rehabilitation of existing carriageway care shall be taken not to scarify / excavate the underlying exposed granular material.
4. Maximum Dry Density (MDD) of Water Bound Macadam layer shall be 100%. In section where subbase is provided its density shall be 98% of MDD. WBM and Subbase shall pertain to gradation as specified in NHA General Specifications.
5. Cross fall of 2% shall be maintained at Subbase formation, in case of new construction and at base course formation in case of existing carriageway.
6. On both sides of the culverts backfilling should be done with Granular Back fill material over which required layers are to be laid. The compactin will be done with plate compactor.
7. Effective Drainage of the road shall be ensured through proper cross slope of the pavement.
8. The material for Formation of Embankment shall pertains to AASHTO Class A-1-a, A-1-b, A-2-4, with Maximum Dry Density (MDD), CBR and Compaction as per NHA General Specifications.


TYPICAL CROSS SECTION FOR SECONDARY ROADS
Notes for Secondary Roads
1. Asphalt Wearing course shall pertain to "Class-B" gradation as specified in NHA General Specification of 1998.
2. Asphalt Base course shall pertain to "Class-A" gradation as specified in NHA General Specification of 1998
3. Asphalt concrete wearing layer shall be designed with air voids in range of 3% to 5%. Air voids greater than this range will result in increased permeability / porosity of mix.
4. For rehabilitation of existing carriageway care shall be taken not to scarify / excavate the underlying exposed granular material.
5. Maximum Dry Density (MDD) of Water Bound Macadam layer shall be 100%. In section where subbase is provided its density shall be 98% of MDD. WBM and Subbase shall pertain to gradation as specified in NHA General Specifications.
6. Cross fall of 2% shall be maintained at Subbase formation, in case of new construction and at base course formation in case of existing carriageway.
7. On both sides of the culverts backfilling should be done with Granular Back fill material over which required layers are to be laid. The compactin will be done with plate compactor.
8. Effective Drainage of the road shall be ensured through proper cross slope of the pavement.
9. The material for Formation of Embankment shall pertains to AASHTO Class A-1-a, A-1-b, A-2-4, with Maximum Dry Density (MDD), CBR and Compaction as per NHA General Specifications.
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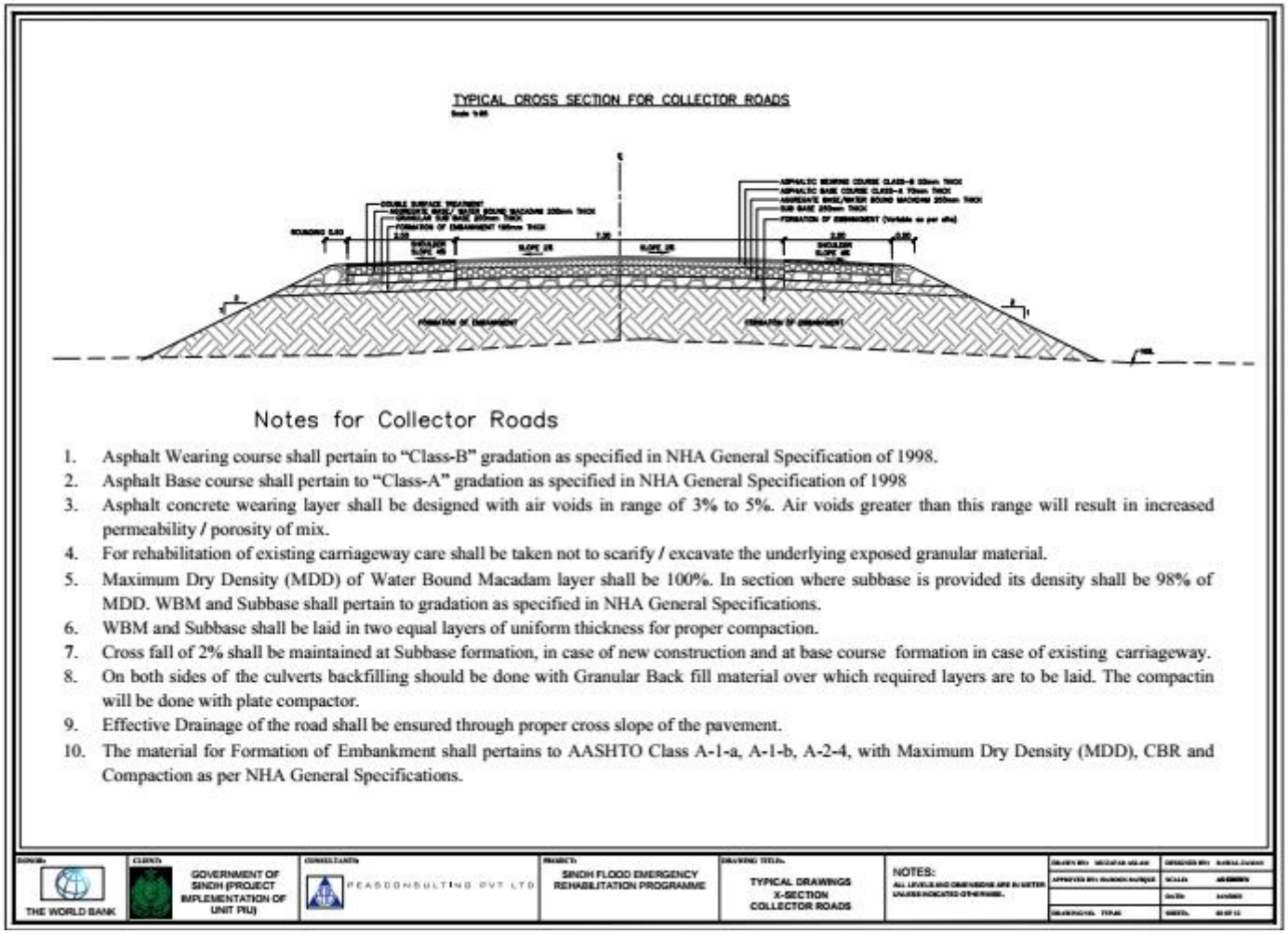
TYPICAL DRAWINGS X-SECTION SECONDARY ROADS
NOTES:


TYPICAL CROSS SECTION FOR COLLECTOR ROADS
Notes for Collector Roads
1. Asphalt Wearing course shall pertain to "Class-B" gradation as specified in NHA General Specification of 1998.
2. Asphalt Base course shall pertain to "Class-A" gradation as specified in NHA General Specification of 1998
3. Asphalt concrete wearing layer shall be designed with air voids in range of 3% to 5%. Air voids greater than this range will result in increased permeability / porosity of mix.
4. For rehabilitation of existing carriageway care shall be taken not to scarify / excavate the underlying exposed granular material.
5. Maximum Dry Density (MDD) of Water Bound Macadam layer shall be 100%. In section where subbase is provided its density shall be 98% of MDD. WBM and Subbase shall pertain to gradation as specified in NHA General Specifications.
6. WBM and Subbase shall be laid in two equal layers of uniform thickness for proper compaction.
7. Cross fall of 2% shall be maintained at Subbase formation, in case of new construction and at base course formation in case of existing carriageway.
8. On both sides of the culverts backfilling should be done with Granular Back fill material over which required layers are to be laid. The compactin will be done with plate compactor.
9. Effective Drainage of the road shall be ensured through proper cross slope of the pavement.
10. The material for Formation of Embankment shall pertains to AASHTO Class A-1-a, A-1-b, A-2-4, with Maximum Dry Density (MDD), CBR and Compaction as per NHA General Specifications.
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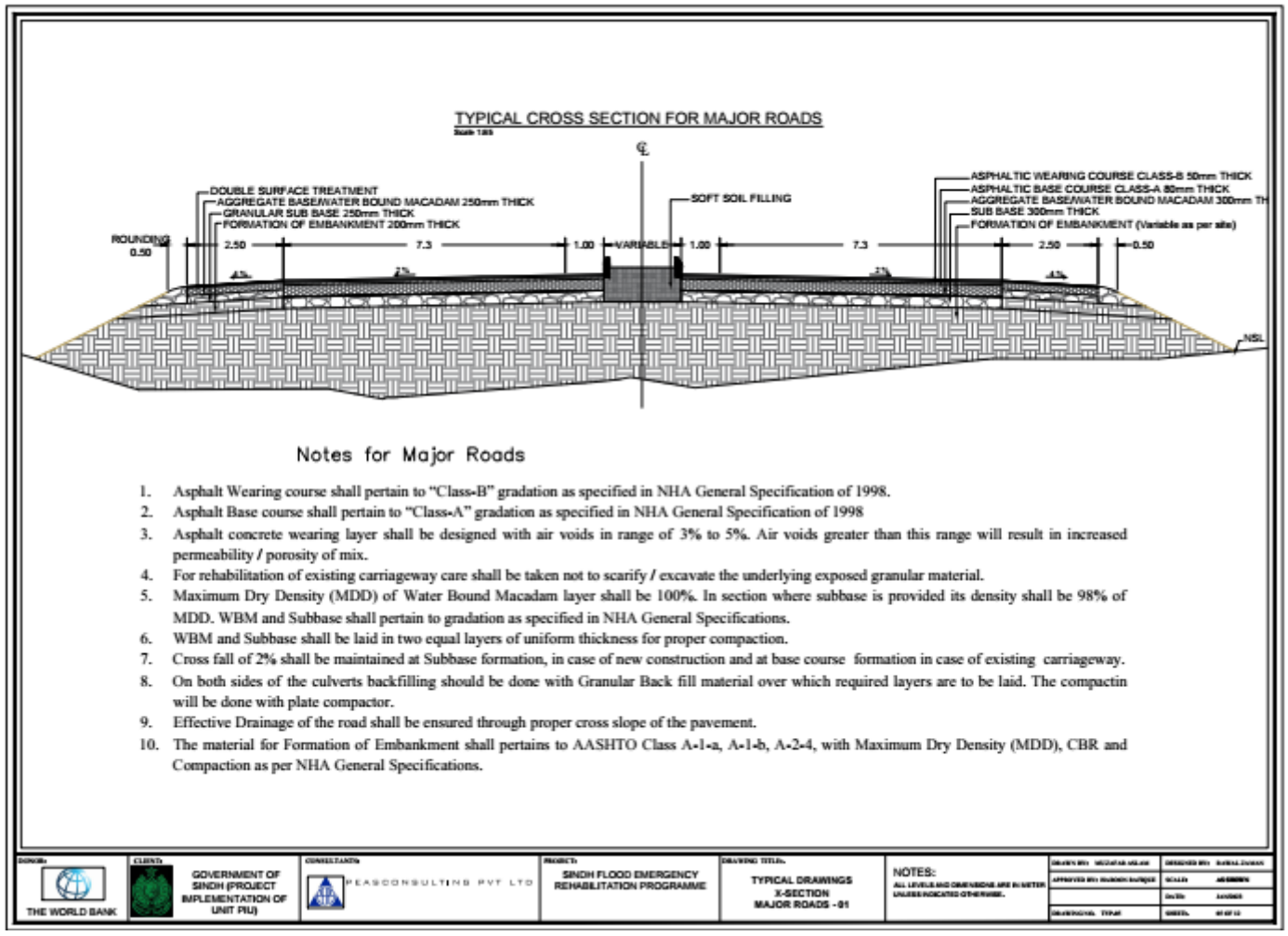
TYPICAL DRAWINGS X-SECTION COLLECTOR ROADS
NOTES:



Notes for Major Roads

1. Asphalt Wearing course shall pertain to "Class-B" gradation as specified in NHA General Specification of 1998.
2. Asphalt Base course shall pertain to "Class-A" gradation as specified in NHA General Specification of 1998
3. Asphalt concrete wearing layer shall be designed with air voids in range of 3% to 5%. Air voids greater than this range will result in increased permeability / porosity of mix.
4. For rehabilitation of existing carriageway care shall be taken not to scarify / excavate the underlying exposed granular material.
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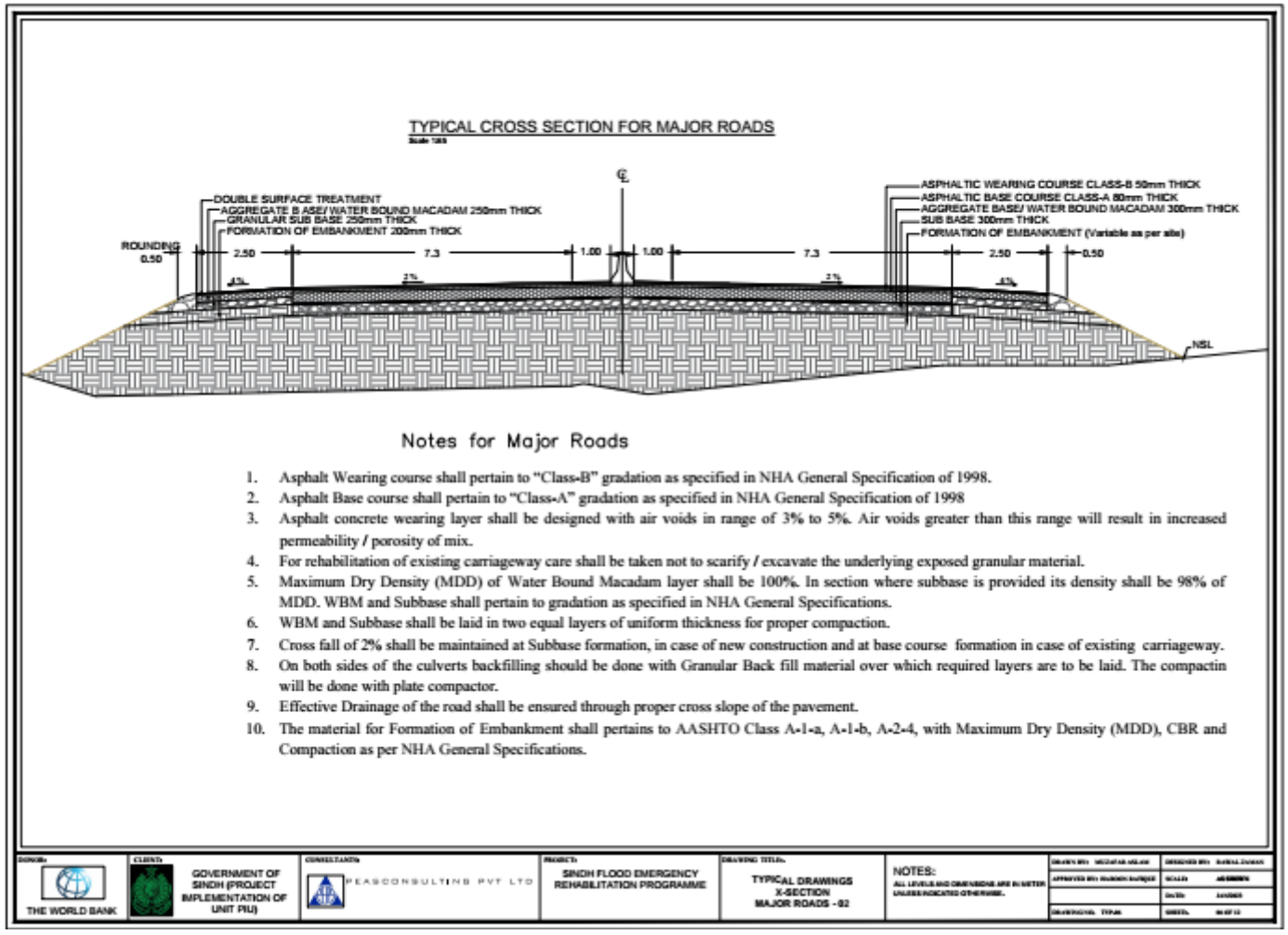
8. On both sides of the culverts backfilling should be done with Granular Back fill material over which required layers are to be laid. The compactin will be done with plate compactor.
9. Effective Drainage of the road shall be ensured through proper cross slope of the pavement.
10. The material for Formation of Embankment shall pertains to AASHTO Class A-1-a, A-1-b, A-2-4, with Maximum Dry Density (MDD), CBR and Compaction as per NHA General Specifications.

THE WORLD BANK	GOVERNMENT OF SINDH (PROJECT IMPLEMENTATION OF UNIT PIU)	REASONSULTING PVT LTD	SINDH FLOOD EMERGENCY REHABILITATION PROGRAMME	TYPICAL DRAWINGS X-SECTION MAJOR ROADS - 01	NOTES: ALL LEVELS AND DIMENSIONS ARE IN METER UNLESS INDICATED OTHERWISE.



Notes for Major Roads

1. Asphalt Wearing course shall pertain to "Class-B" gradation as specified in NHA General Specification of 1998.
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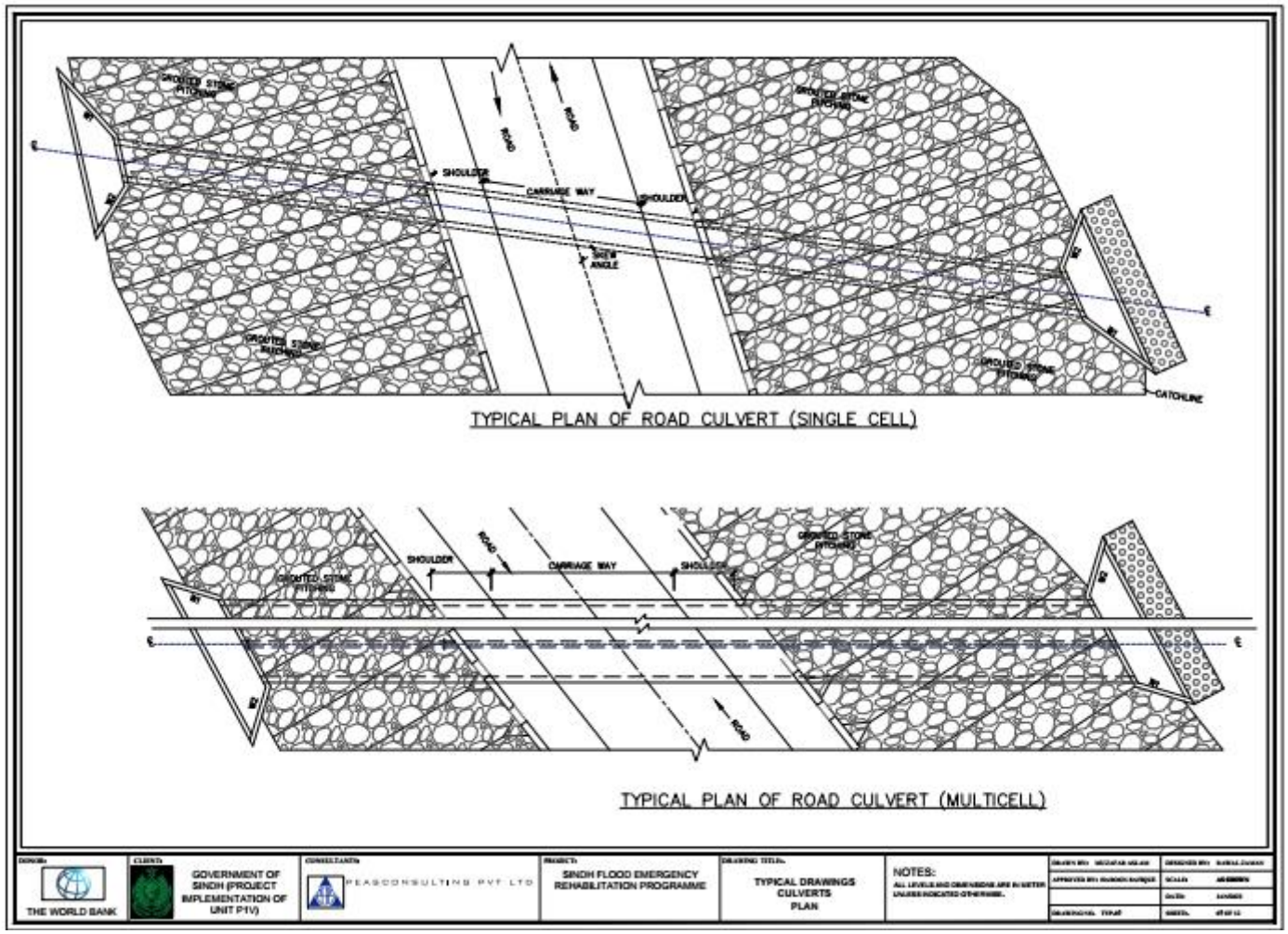
9. Effective Drainage of the road shall be ensured through proper cross slope of the pavement.
10. The material for Formation of Embankment shall pertains to AASHTO Class A-1-a, A-1-b, A-2-4, with Maximum Dry Density (MDD), CBR and Compaction as per NHA General Specifications.

THE WORLD BANK	GOVERNMENT OF SINDH (PROJECT IMPLEMENTATION OF UNIT PIU)	PEASCONSULTING PVT LTD	SINDH FLOOD EMERGENCY REHABILITATION PROGRAMME	TYPICAL DRAWINGS X-SECTION MAJOR ROADS - 02	NOTES: ALL LEVELS AND DIMENSIONS ARE IN METER UNLESS INDICATED OTHERWISE.


TYPICAL PLAN OF ROAD CULVERT (SINGLE CELL)
TYPICAL PLAN OF ROAD CULVERT (MULTICELL)
GROUTED STONE PITCHING
ROAD
SHOULDER
CARRIAGE WAY
SKEW ANGLE
CATCHLINE
THE WORLD BANK
GOVERNMENT OF SINDH (PROJECT IMPLEMENTATION OF UNIT PIU)
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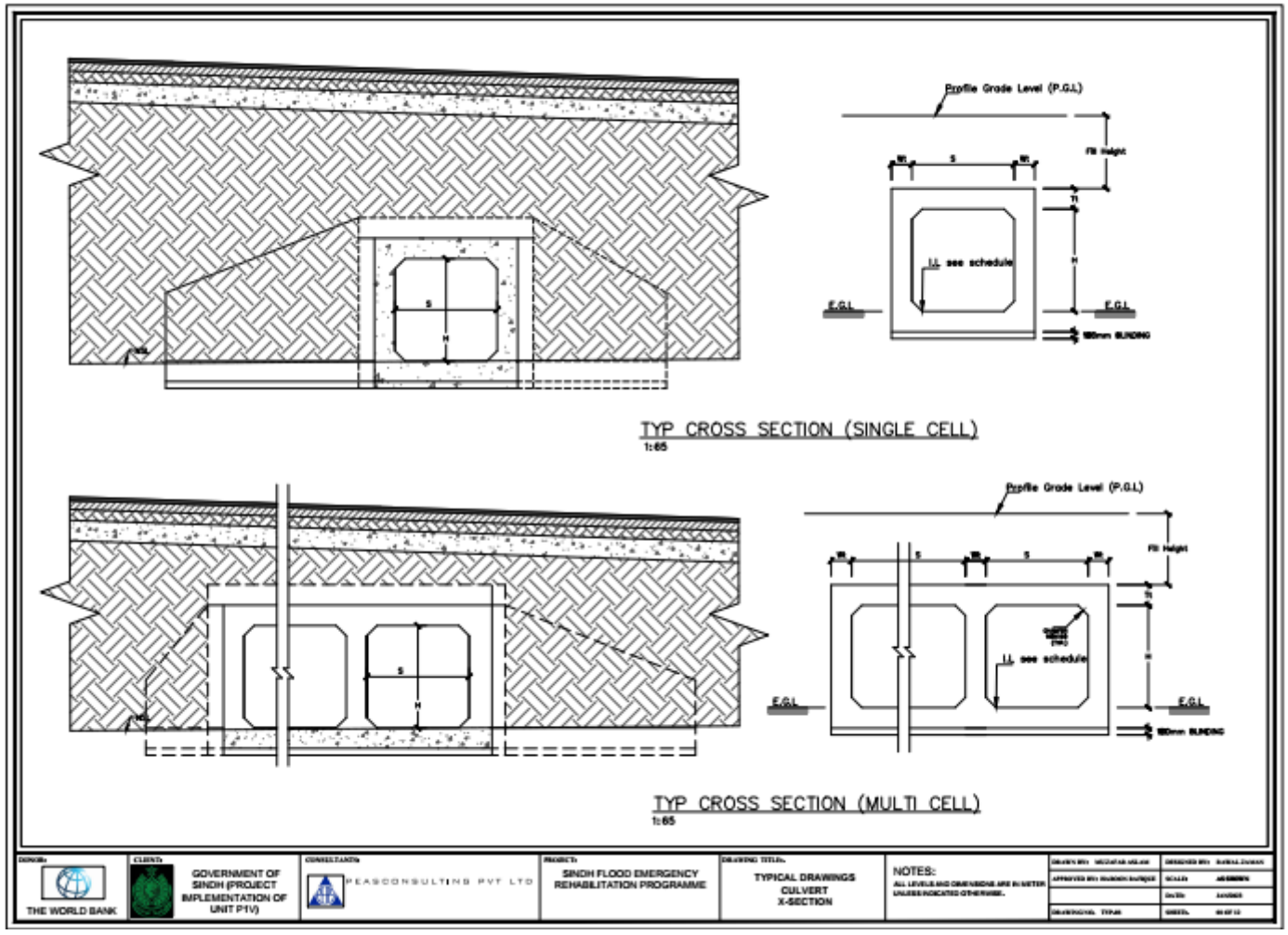
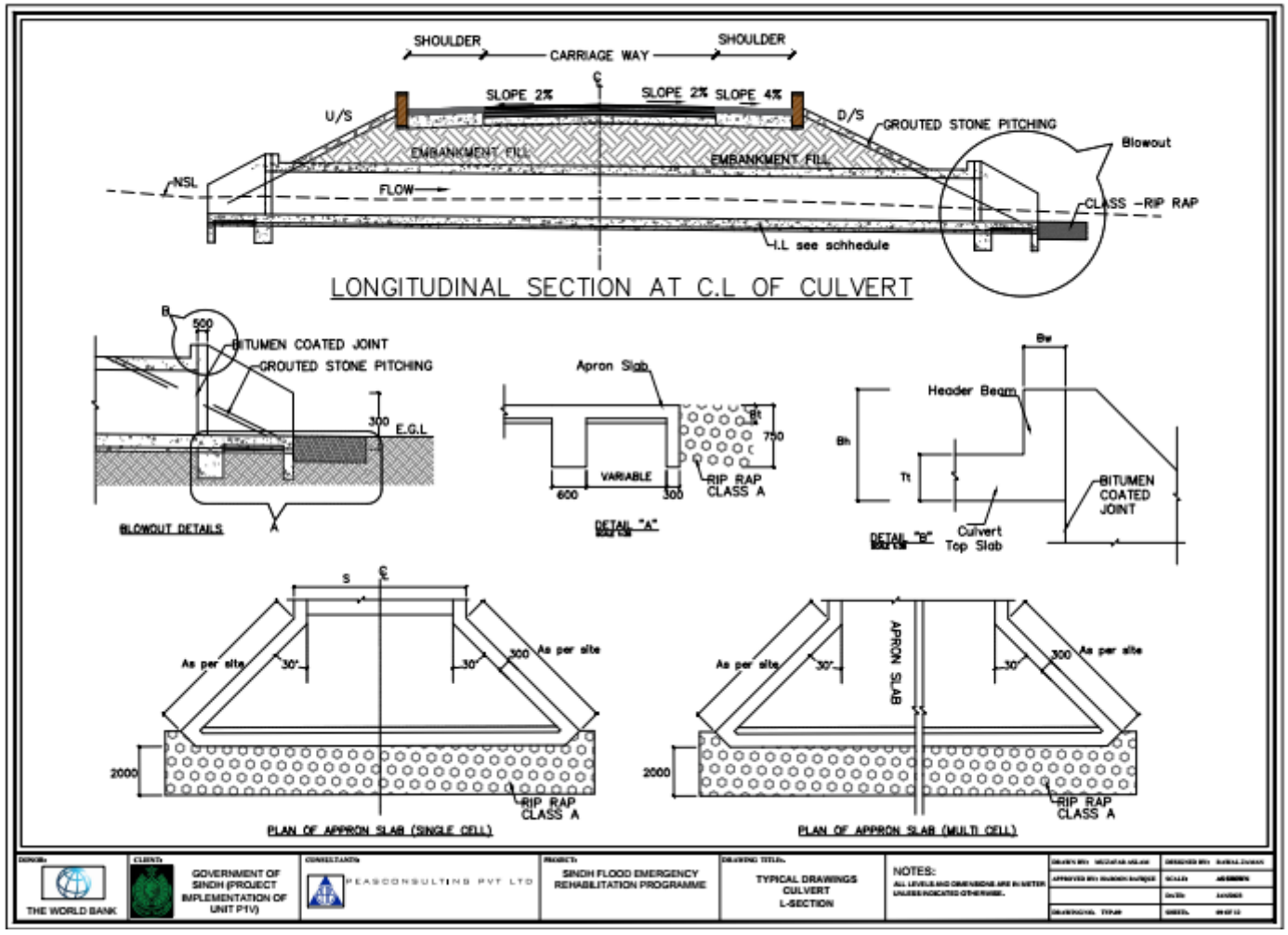
SINDH FLOOD EMERGENCY REHABILITATION PROGRAMME
TYPICAL DRAWINGS CULVERTS PLAN
NOTES:


Profile Grade Level (P.G.L)
Fill Height
see schedule
E.G.L
E.G.L
TYP CROSS SECTION (SINGLE CELL)
1:65
Profile Grade Level (P.G.L)
Fill Height
see schedule
E.G.L
E.G.L
TYP CROSS SECTION (MULTI CELL)
1:65
THE WORLD BANK
GOVERNMENT OF SINDH (PROJECT IMPLEMENTATION OF UNIT P1U)
PEASCONSULTING PVT LTD
SINDH FLOOD EMERGENCY REHABILITATION PROGRAMME
TYPICAL DRAWINGS CULVERT X-SECTION
NOTES:


SHOULDER
CARRIAGE WAY
SHOULDER
SLOPE 2%
SLOPE 2%
SLOPE 4%
U/S
D/S
GROUTED STONE PITCHING
Blowout
EMBANKMENT FILL
EMBANKMENT FILL
NSL
FLOW
CLASS -RIP RAP
I.L see schhedule
LONGITUDINAL SECTION AT C.L OF CULVERT
BITUMEN COATED JOINT
GROUTED STONE PITCHING
300
E.G.L
BLOWOUT DETAILS
Apron Slab
750
VARIABLE
600
300
RIP RAP
CLASS A
DETAIL "A"
Bw
Header Beam
Bh
Tt
BITUMEN
COATED
JOINT
Culvert
Top Slab
DETAIL "B"
As per site
30°
300
2000
RIP RAP
CLASS A
PLAN OF APPRON SLAB (SINGLE CELL)
APRON SLAB
PLAN OF APPRON SLAB (MULTI CELL)
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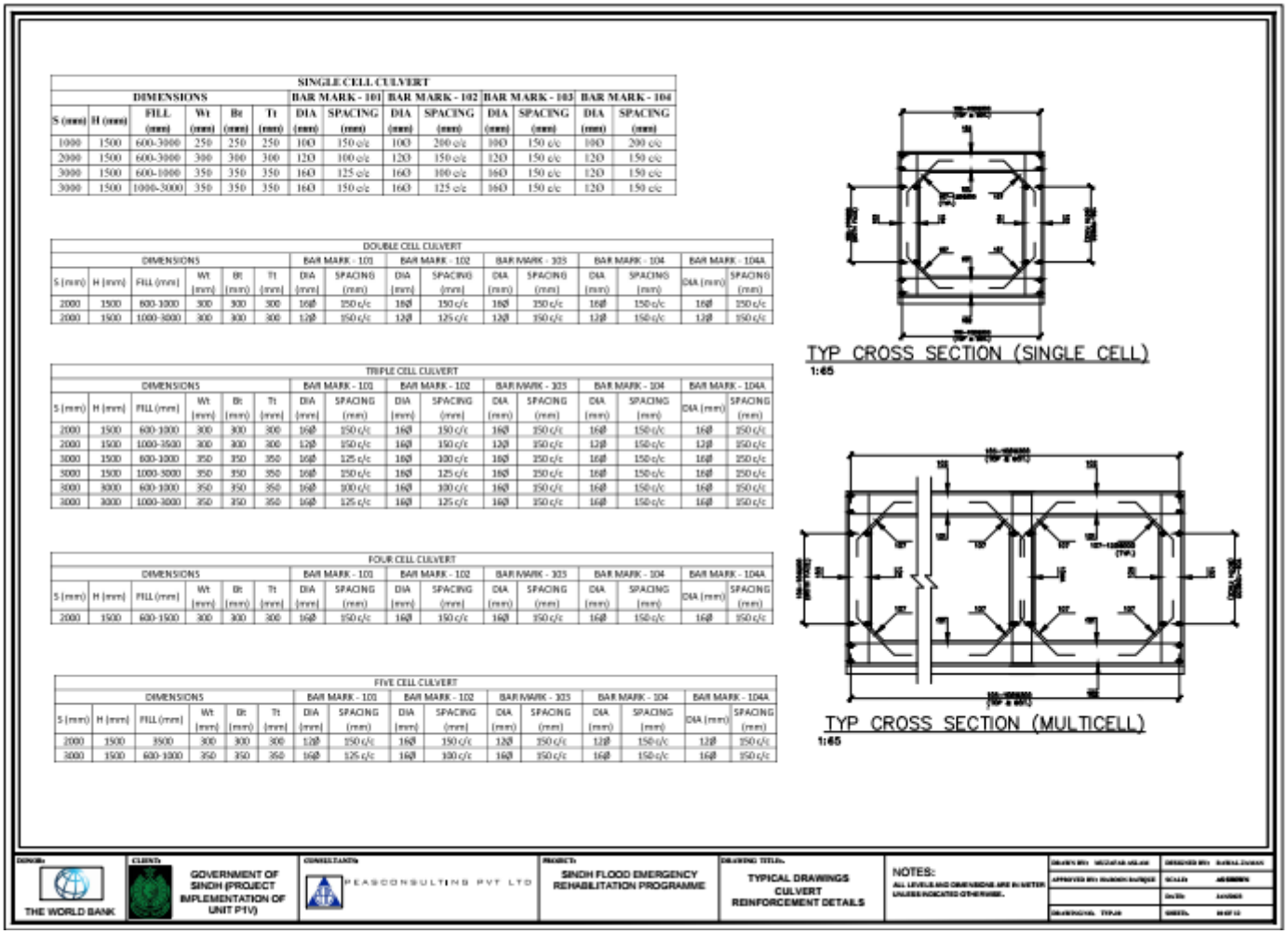
SINDH FLOOD EMERGENCY REHABILITATION PROGRAMME
TYPICAL DRAWINGS
CULVERT
L-SECTION
NOTES:



SINGLE CELL CULVERT

DIMENSIONS						BAR MARK - 101		BAR MARK - 102		BAR MARK - 103		BAR MARK - 104	
S (mm)	H (mm)	FILL (mm)	Wt (mm)	Bt (mm)	Tt (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)
1000	1500	600-3000	250	250	250	10Ø	150 c/c	10Ø	200 c/c	10Ø	150 c/c	10Ø	200 c/c
2000	1500	600-3000	300	300	300	12Ø	100 c/c	12Ø	150 c/c	12Ø	150 c/c	12Ø	150 c/c
3000	1500	600-1000	350	350	350	16Ø	125 c/c	16Ø	100 c/c	16Ø	150 c/c	12Ø	150 c/c
3000	1500	1000-3000	350	350	350	16Ø	150 c/c	16Ø	125 c/c	16Ø	150 c/c	12Ø	150 c/c

DOUBLE CELL CULVERT

DIMENSIONS						BAR MARK - 101		BAR MARK - 102		BAR MARK - 103		BAR MARK - 104		BAR MARK - 104A	
S (mm)	H (mm)	FILL (mm)	Wt (mm)	Bt (mm)	Tt (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)
2000	1500	600-1000	300	300	300	16Ø	150 c/c	16Ø	150 c/c	16Ø	150 c/c	16Ø	150 c/c	16Ø	150 c/c
2000	1500	1000-3000	300	300	300	12Ø	150 c/c	12Ø	125 c/c	12Ø	150 c/c	12Ø	150 c/c	12Ø	150 c/c

TRIPLE CELL CULVERT

DIMENSIONS						BAR MARK - 101		BAR MARK - 102		BAR MARK - 103		BAR MARK - 104		BAR MARK - 104A	
S (mm)	H (mm)	FILL (mm)	Wt (mm)	Bt (mm)	Tt (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)
2000	1500	600-1000	300	300	300	16Ø	150 c/c	16Ø	150 c/c	16Ø	150 c/c	16Ø	150 c/c	16Ø	150 c/c
2000	1500	1000-3500	300	300	300	12Ø	150 c/c	16Ø	150 c/c	12Ø	150 c/c	12Ø	150 c/c	12Ø	150 c/c
3000	1500	600-1000	350	350	350	16Ø	125 c/c	16Ø	100 c/c	16Ø	150 c/c	16Ø	150 c/c	16Ø	150 c/c
3000	1500	1000-3000	350	350	350	16Ø	150 c/c	16Ø	125 c/c	16Ø	150 c/c	16Ø	150 c/c	16Ø	150 c/c
3000	3000	600-1000	350	350	350	16Ø	100 c/c	16Ø	100 c/c	16Ø	150 c/c	16Ø	150 c/c	16Ø	150 c/c
3000	3000	1000-3000	350	350	350	16Ø	125 c/c	16Ø	125 c/c	16Ø	150 c/c	16Ø	150 c/c	16Ø	150 c/c

FOUR CELL CULVERT

DIMENSIONS						BAR MARK - 101		BAR MARK - 102		BAR MARK - 103		BAR MARK - 104		BAR MARK - 104A	
S (mm)	H (mm)	FILL (mm)	Wt (mm)	Bt (mm)	Tt (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)
2000	1500	600-1500	300	300	300	16Ø	150 c/c	16Ø	150 c/c	16Ø	150 c/c	16Ø	150 c/c	16Ø	150 c/c

FIVE CELL CULVERT

DIMENSIONS						BAR MARK - 101		BAR MARK - 102		BAR MARK - 103		BAR MARK - 104		BAR MARK - 104A	
S (mm)	H (mm)	FILL (mm)	Wt (mm)	Bt (mm)	Tt (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)
2000	1500	3500	300	300	300	12Ø	150 c/c	16Ø	150 c/c	12Ø	150 c/c	12Ø	150 c/c	12Ø	150 c/c
3000	1500	600-1000	350	350	350	16Ø	125 c/c	16Ø	100 c/c	16Ø	150 c/c	16Ø	150 c/c	16Ø	150 c/c

TYP CROSS SECTION (SINGLE CELL)
1:65

TYP CROSS SECTION (MULTICELL)
1:65

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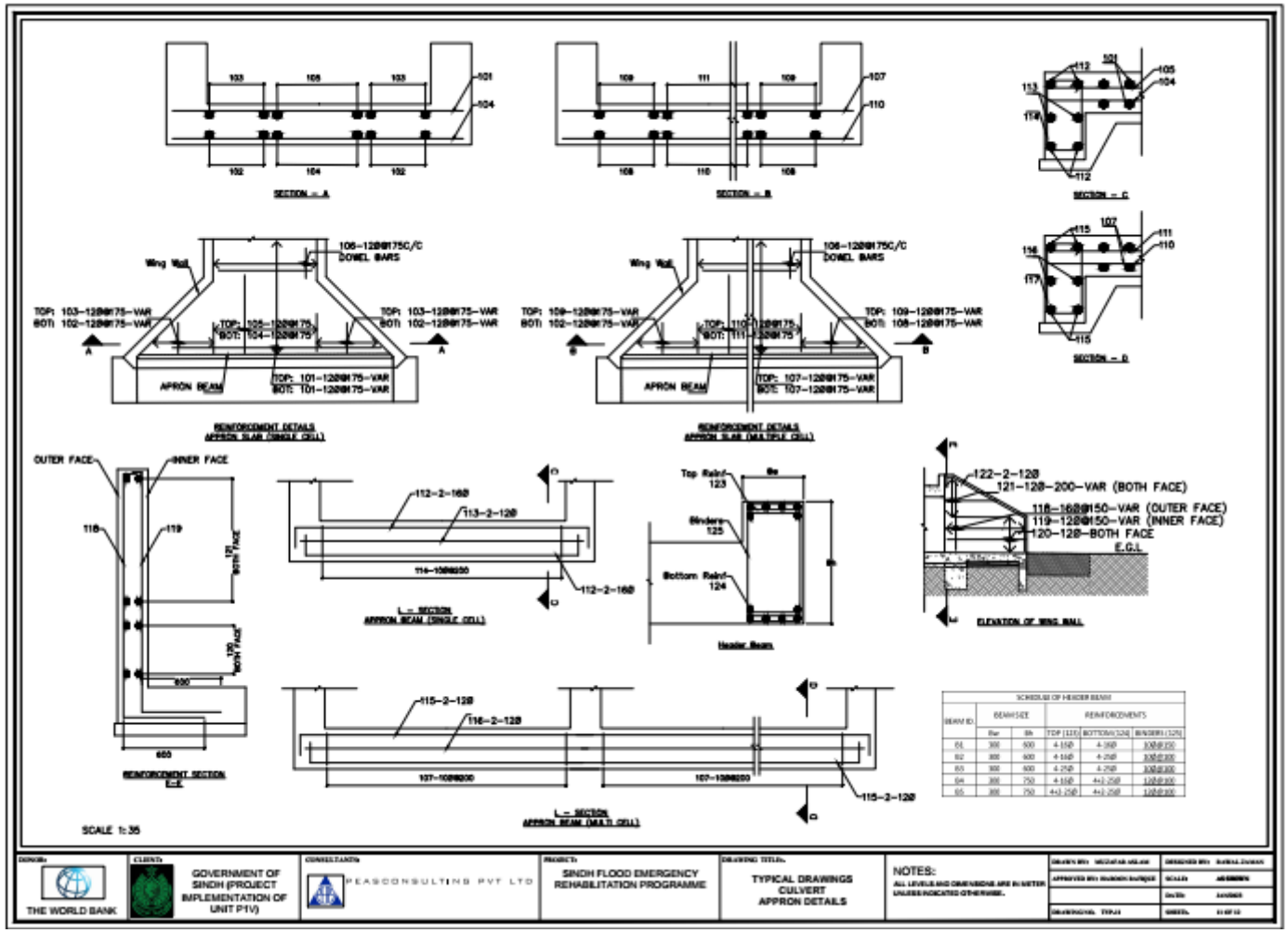
SINDH FLOOD EMERGENCY REHABILITATION PROGRAMME

TYPICAL DRAWINGS CULVERT REINFORCEMENT DETAILS

NOTES:
ALL LEVELS AND DIMENSIONS ARE IN METER UNLESS INDICATED OTHERWISE.


SECTION – A
SECTION – B
SECTION – C
SECTION – D
REINFORCEMENT DETAILS
APRON SLAB (SINGLE CELL)
REINFORCEMENT DETAILS
APRON SLAB (MULTIPLE CELL)
APRON BEAM
Wing Wall
106–12@@175C/C
DOWEL BARS
OUTER FACE
INNER FACE
REINFORCEMENT SECTION
L – SECTION
APRON BEAM (SINGLE CELL)
Top Reinf.
123
Dividers
125
Bottom Reinf.
124
Header Beam
122–2–12@
121–12@–200–VAR (BOTH FACE)
116–16@@150–VAR (OUTER FACE)
119–12@@150–VAR (INNER FACE)
120–12@–BOTH FACE
E.G.L
ELEVATION OF WING WALL
L – SECTION
APRON BEAM (MULTI CELL)
SCALE 1:35
SCHEDULE OF HEADER BEAM
GOVERNMENT OF SINDH (PROJECT IMPLEMENTATION OF UNIT P1V)
THE WORLD BANK
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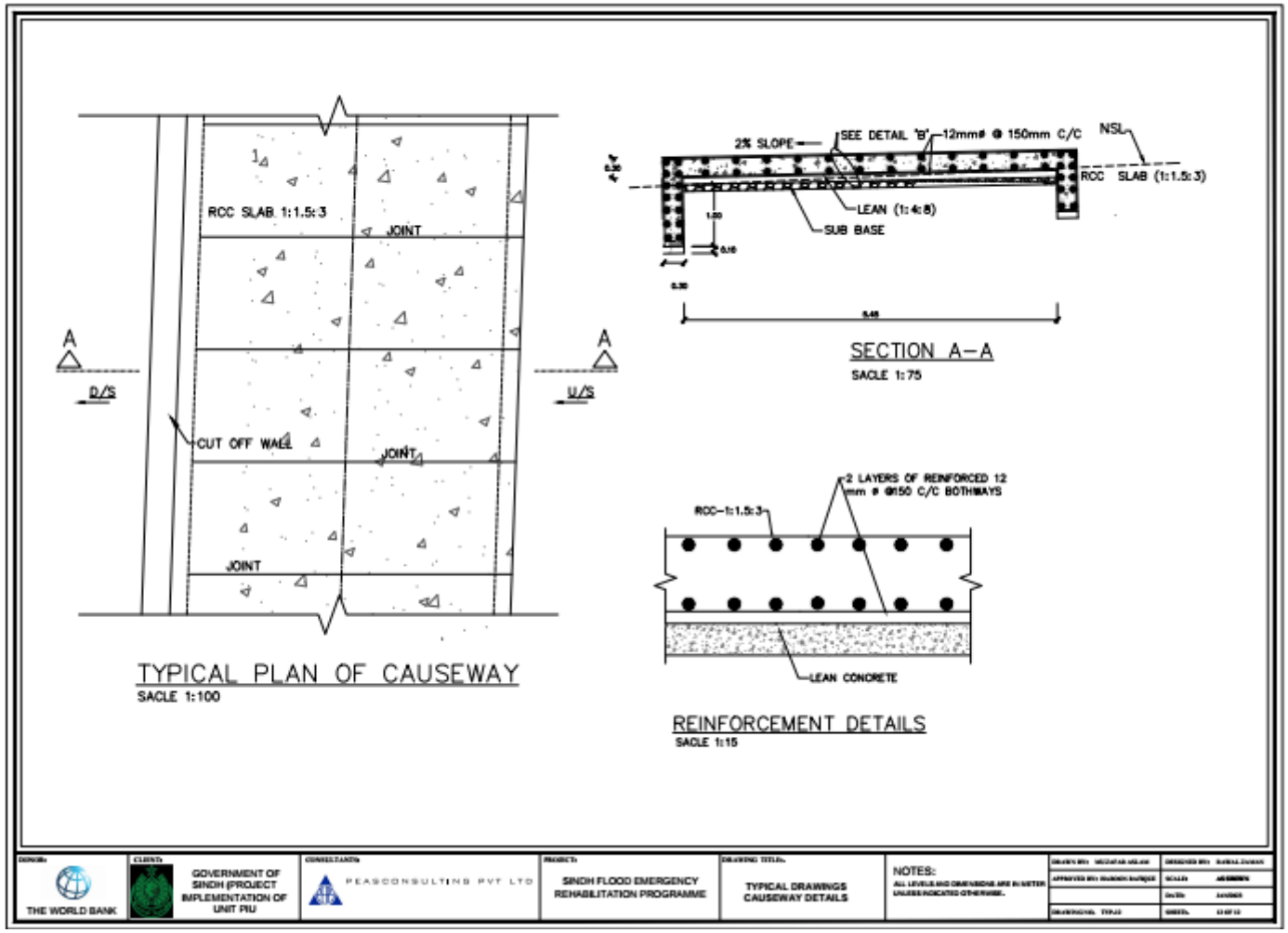
TYPICAL DRAWINGS CULVERT APPRON DETAILS
NOTES:


RCC SLAB 1:1.5:3
JOINT
CUT OFF WALL
JOINT
JOINT
A
A
D/S
U/S
TYPICAL PLAN OF CAUSEWAY
SACLE 1:100
2% SLOPE
SEE DETAIL 'B' 12mm# @ 150mm C/C
NSL
RCC SLAB (1:1.5:3)
LEAN (1:4:8)
SUB BASE
SECTION A-A
SACLE 1:75
2 LAYERS OF REINFORCED 12 mm # @150 C/C BOTHWAYS
RCC-1:1.5:3
LEAN CONCRETE
REINFORCEMENT DETAILS
SACLE 1:15
THE WORLD BANK
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TYPICAL DRAWINGS CAUSEWAY DETAILS
NOTES:

Annexure III: Avifauna in Sub-Project Area

Sr. 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 buteo*	WV
5	Imperial Eagle	*Aquila heliacal*	WV
6	Laggar Falcon	*Falco jugger*	R
7	Pallid Merlin	*Falco columbarius*	WV
8	Common Kestrel	*Falco tinnunculus*	WV/r
9	Grey Partridge	*Francolinus Pondicerianus*	R
10	Red Wattle Lapwing	*Vanellus indicus*	R
11	Chestnut-bellied / Indian Sandgrouse	*Pterocles exustus*	R
12	Blue Rock Pigeon	*Columba livia*	R
13	Ring Dove	*Streptopelia decaocto*	R
14	Little Brown / Senegal Dove	*Streptopelia senegalensis*	R
15	Rose ringed Parakeet	*Psittacula krameri*	R
16	Common Crow-Pheasant or Coucal	*Centropus sinensis*	R
17	Syke's or Sind Nightjar	*Caprimulgus Mahrattensis*	R
18	House Swift	*Apus affinis*	R
19	Indian Pied Kingfisher	*Ceryle rudis*	R
20	White breasted Kingfisher	*Halcyon smyrnensis*	R
21	Sind Small Green Bee- eater	*Merops orientalis*	R
22	Roller or Blue Jay	*Coracias benghalensis*	R
23	Hoopoe	*Upupa epops*	WV
24	Ashycrowned Finch-Lark	*Eremopterix grisea*	R
25	Indian Desert Finch-Lark	*Ammomanes deserti*	R
26	Crested Lark	*Galerida cristata*	R
27	Indian Bush Lark	*Mirafra erythroptera*	R
28	Common Swallow	*Hirundo rustica*	WV
29	Grey Shrike	*Lanius excubitor*	R
30	Black Drongo or King Crow	*Dicrurus adsimilis*	R
31	Rosy Starling or Rosy Pastor	*Sturnus roseus*	DPM
32	Bank Myna	*Acridotheres ginginianus*	R
33	Indian Myna	*Acridotheres tristis*	R
34	Tree Pie	*Dendrocitta vagabunda*	R
35	Sind House Crow	*Corvus splendens*	R
36	White-cheeked Bulbul	*Pycnonotus leucogenys*	R
37	Red-vented Bulbul	*Pycnonotus cafer*	R
38	Common Babbler	*Turdoides caudatus*	R
39	Sind Jungle Babbler	*Turdoides striatus*	R
40	Indian Streaked Wren- Warbler / Long tailed Warbler	*Prinia gracilis*	R
41	Black Redstart	*Phoenicurus ochruros*	WV
42	Indian Robin	*Saxicoloides fulicata*	R
43	Yellow or Citrine Wagtail	*Motacilla flava*	PM

Sr. No.	Common Name	Scientific Name	Conservation status by IUCN
44	White or Pied Wagtail	*Motacilla alba*	WV
45	Purple Sunbird	*Nectarinia asiatica*	R
46	House Sparrow	*Passer domesticus*	R
Legend: R = Resident WV = Winter Visitor M = Migratory PM = Passage Migrant SV= Summer Visitor			

Annexure IV: Suggested Measure to be Included in The Contracts

Stage of Contractual Process	Suggested Due Diligence
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 clearly include key staff qualified and experienced in managing similar projects, and demonstrated capacity to manage social and environmental issues, including issues pertaining to 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) Clearly 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 clearly 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 documents 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. Borrower should disclose the approved CESMP. • Supervision Engineers must approve occupational health and safety management plan is approved before contractor is mobilized at site

Annexure V: 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 that needs to be taken.

(c) When any heading is inapplicable, enter NIL.

……

Employer's signature	Witness
……	……
Employee's signature	Witness
……..	……
Date	Date

Annexure VI: Photolog






S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
1	Rehablitation of road from Jaheja Khanbroth road to Rasool bux Rodnani and village Muhammad essa Rodnani and Haji Kareem Bux Rodnani	Sehwan	12	3	26°26'38.55"N 67°43'30.44"E 26°26'33.32"N 67°43'30.13"E 26°26'10.93"N 67°42'17.60"E

S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
2	Rehbilitation of road from Sehwan Airport road to Bubak	Sehwan/Bubak	16	3	26.282732 67.432906 26.27208 67.422199






S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
3	Rehablitation of road from Pir Chattan to Bubak Jaheja Khmbroth road via Dhingano Balal	Sehwan	12	4	26°26'30.54"N 67°45'25.98"E 26°26'21.83"N 67°45'26.37"E 26°26'7.95"N






S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
4	Rehablitation of road from Jhangara Chhinni road to village Kot Barocho via Tahani	Sehwan	12	9.65	26°19'42.55"N 67°40'49.82"E 26°22'41.99"N 67°39'34.99"E






S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
5	Rehabilitation of road from Pre-stressed Bridge at LS Bund to Village Bilawalpur	Sehwan	12	3	26°32'1.13"N 67°48'51.31"E 26°33'4.43"N 67°49'28.19"E






S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
6	Rehabilitation of road from Kot Barocho to Shaikh Dhaman	Sehwan	12	5	26°22'42.19"N 67°39'34.78"E 26°23'22.07"N 67°38'4.36"E






S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
7	Rehablitation of road from Jhangara Byepass road	Sehwan	18	3	26°20'41.64"N 67°43'34.42"E 26°20'3.46"N 67°43'33.36"E






S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
8	Rehablitation of road from Sehwan Jhangara road to village Akri	Sehwan	12	3	26°21'25.74"N 67°46'35.10"E 26°20'38.72"N 67°46'11.96"E






S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
9	Rehablitation of road from Chingiani to Rajab Shakhani	Sehwan	12	4	26°18'54.17"N 67°46'1.16"E 26°18'47.49"N 67°46'29.52"E






S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
10	Rehablitation of road from Jaheja Khanbroth to Village Bilhan	Sehwan	12	3.22	26°26'21.29"N 67°44'17.44"E 26°25'21.55"N 67°45'1.91"E






S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
11	Rehablitation of road from Jhangara to Naing Sharif via Kai (18' Wide) i/c 1300Rft High Level Causeway	Sehwan	18	20	26°20'10.55"N 67°42'27.01"E 26°19'39.01"N 67°40'28.90"E






S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
12	Rehablitation of road from I.H.Way Yaqoob Panhwar Old Alingment	Majhand	18	6.2	26°14'36.39"N 67°54'19.27"E 26°13'57.80"N 67°55'39.41"E






S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
13	Rehablitation of road from Bubak Shah Bukhari to Village Sawan Laghari	Sehwan	12	3	26°31'17.28"N 67°49'28.62"E 26°30'41.95"N 67°49'34.25"E






S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
14	Rehablitation of road from Ghulam Nabi Chutto to village Hadi bux chutto	Sehwan	12	3.2	26°26'56.15"N 67°46'25.06"E 26°26'50.44"N






S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
15	Rehablitation of road from Indus Highway to Sehwan Airport dual carriage way	Sehwan	24	3	26°28'38.06"N 67°43'40.97"E 26°28'47.59"N 67°43'30.12"E






S# No	Name Of Road	Location /Taluka	Existing Width (Ft)	Length (In Kms)	Gps Coordinates
16	Rehablitation of road from Sukhya Mori to Ameerpir Mori via Bundhan Babrio links to Qadir Bux Chanwan Roshan (12' Wide)	Sehwan	12	8	26°35'59.98"N 67°46'45.79"E 26°35'58.55"N 67°47'48.33"E