



## PROJECT IMPLEMENTATION UNIT (PIU)

# INTEGRATED FLOOD RESILIENCE AND ADAPTATION PROJECT (IFRAP- COMPONENT - I)

## ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)



### PACKAGE-V

## RECONSTRUCTION OF FLOOD PROTECTION BUND NEAR ZAIN UL ABIDEEN KHAN KHOSA, DISTRICT SOHBATPUR

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## **ABBREVIATIONS AND ACRONYMS**

|         |                                                                  |
|---------|------------------------------------------------------------------|
| BEPA    | Balochistan Environmental Protection Agency                      |
| BIWRMDP | Balochistan Integrated Water Resource Management and Development |
| BLEP    | Balochistan Livelihood and Entrepreneurship Project              |
| BOQs    | Bill of Quantities                                               |
| CSC     | Construction Supervision Consultant                              |
| CWD     | Communication and Works Department                               |
| EMP     | Environmental Management Plan                                    |
| EPA     | Environmental Protection Agency                                  |
| ESIA    | Environmental and Social Impact Assessment                       |
| ESHS    | Environmental, Social, Health and Safety                         |
| ESMF    | Environmental and Social Management Framework                    |
| WB-ESSs | World Bank Environmental and Social Standards                    |
| FPMU    | Federal Project Management Unit                                  |
| GBV     | Gender Base Violence                                             |
| GDP     | Gross Domestic Product                                           |
| GIS     | Geographic Information System                                    |
| GoB     | Government of Balochistan                                        |
| GRM     | Grievance Redressal Mechanism                                    |
| ICT     | Information and Communication Technology                         |
| IEE     | Initial Environmental Examination                                |
| IFRAP   | Integrated Flood Resilience and Adaptation Project               |
| IUCN    | International Union for Conservation of Nature                   |
| LMP     | Labor Management Plan                                            |
| MGD     | Millennium Development Goal                                      |
| MIS     | Management Information System                                    |
| MoPDSI  | Ministry of Planning, Development and Special Initiatives        |
| NOC     | No Objection Certificate                                         |
| NSER    | National Socio-Economic Registry                                 |
| OHS     | Occupational Health and Safety                                   |
| PCC     | Public Complaints Centre                                         |
| PDNA    | Post-Disaster Needs Assessment                                   |
| PDO     | Project Development Objective                                    |
| PIS     | Project Implementation Strategy                                  |
| PIU     | Project Implementation Unit                                      |
| PMD     | Pakistan Meteorological Department                               |
| PPE     | Personal Protective Equipment                                    |
| PSC     | Project Steering Committee                                       |
| SEP     | Stakeholder Engagement Plan                                      |
| STAT    | Social Technical Assistance Team                                 |
| SWMPs   | Solid Waste Management Plans                                     |
| VRCs    | Village Reconstruction Committees                                |
| WB      | World Bank                                                       |
| SEP     | Stakeholder Engagement Plan                                      |
| FPMU    | Field Project Management Unit                                    |
| PSIA    | Poverty and Social Impact Analysis                               |
| CFP     | Community Feedback Process                                       |

# EXECUTIVE SUMMARY

## EXECUTIVE SUMMARY

### 1. PROJECT BACKGROUND

Balochistan, the largest province of Pakistan, remains one of the most water-stressed and climate-vulnerable regions of the country. Its fragile irrigation infrastructure, arid climate, and dispersed rural settlements make it highly susceptible to both droughts and floods. The catastrophic monsoon floods of 2022 caused extensive damage to dams, irrigation systems, and flood protection infrastructure, disrupting livelihoods, destroying crops, and endangering rural communities.

In response, the Government of Pakistan, with financial assistance from the World Bank, launched the Integrated Flood Resilience and Adaptation Project (IFRAP) under the broader *Post-Flood 2022 Reconstruction Programme: Resilience Enhancement and Livelihood Diversification in Balochistan*. IFRAP aims to restore and strengthen the province's water and flood management systems, enhance agricultural productivity, and integrate climate resilience into infrastructure planning and implementation.

Initially, 55 sub-projects were included in the PC-I under the Integrated Flood Resilience & Adaptation Project (IFRAP). During initial surveys twenty (20) sub-projects couldn't meet the World Bank's selection criteria given in Project Appraisal Document (PAD), hence, dropped, whereas the remaining thirty five (36) sub-projects were shortlisted for detailed design.

These Thirty five (35) shortlisted sub-projects as shown in Figure -1-1 below are located in 19 Districts of Balochistan, including Districts Awaran, Lasbela, Hub, Naseerabad, Jaffarabad, Sohbat Pur, Jhal Magsi, Harnai, Musakhel, Sibi, Kachhi, Killa Saifullah, Pishin, Ziarat, Kalat, Mastung, Kharan, Nushki, and Washuk. The portfolio consists of 11 dams /storage structures, 11 Perennial/ Flood Irrigation schemes, and 13 flood protection structures, which have been grouped in thirteen Packages. The Zain ul Abideen Khan Khoso Flood Protection Bund in District Sohbatpur is one of the sub-projects being implemented under Package-II of IFRAP to protect local settlements and agricultural lands from recurrent flood events.

The Zain ul Abideen Khan Khosa Flood Protection Bund lies near villages Zain ul Abideen, Bostan, Saindad and Nasir Khan at coordinates 28°15'54.80"N, 68°14'50.27"E. The proposed bund would be homogenous compacted earth-fill embankment, approximately 2250 meters in length, designed to protect the area from floodwaters originating from the Kachhi Plain. The sub-project will rehabilitate and strengthen the existing damaged structure with improved design standards and materials to withstand future hydrological extremes.

The project aims to:

- Protect agricultural lands and human settlements from future flood risks.
- Enhance climate resilience through strengthened flood protection infrastructure.
- Promote sustainable land use and agricultural productivity; and
- Support socio-economic recovery of flood-affected communities in Sohbatpur District.

The proposed works will be confined to previously disturbed areas and do not intersect with any protected areas, wetlands, or ecologically sensitive zones.

### 2. OBJECTIVES OF THE ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

The Environmental and Social Management Plan (ESMP) has been prepared in line with the World Bank Environmental and Social Framework (ESF), the Environmental and Social Commitment Plan (ESCP), and relevant national and provincial environmental legislation. The ESMP provides a practical framework for identifying, mitigating, and monitoring potential

environmental and social risks during project planning, construction, and operation. Its primary objectives are to:

1. Ensure that environmental and social impacts are effectively managed and mitigated;
2. Promote compliance with World Bank Environmental & Social Standards (ESS 1–10).
3. Enhance occupational health, safety, and welfare of workers and nearby communities.
4. Maintain stakeholder participation and transparency through effective consultation and grievance mechanisms; and
5. Ensure long-term sustainability, climate resilience, and community safety of the flood protection infrastructure.

The ESMP will form part of the tender and contract documents to ensure that the Construction Contractor (CC) and Construction Supervision Consultant (CSC) fully integrate environmental and social compliance requirements into their respective roles.

### **3. LEGAL AND POLICY FRAMEWORK**

The ESMP is guided by the following frameworks and instruments:

- World Bank Environmental and Social Standards (ESS 1–10), covering risk management, labor and working conditions, pollution prevention, community health and safety, biodiversity, and stakeholder engagement.
- IFC and World Bank Group Occupational Health and Safety Guidelines.
- Pakistan Environmental Protection Act, 1997, and Balochistan Environmental Protection Act, 2012.
- National Environmental Policy, 2005, National Conservation Strategy, Pakistan Climate Change Act, 2017, and National Disaster Management Act, 2010; and
- Relevant international conventions on biodiversity, climate change, labor standards, and cultural heritage to which Pakistan is a signatory.

### **4. ENVIRONMENTAL AND SOCIAL BASELINE**

The Zain ul Abideen Khan Khoso Flood Protection Bund site lies within the Kachhi River Basin, characterized by semi-arid climate, low vegetation, and periodic flash floods from hill torrents. The geological formation mainly comprises alluvial and gravelly silt deposits. Groundwater is limited and variable in quality. The area supports subsistence agriculture and livestock-based livelihoods. There are no protected ecological habitats, forests, or significant cultural heritage sites within or near the project footprint.

Socio-economically, local communities are small, rural, and economically vulnerable. The project's implementation will provide short-term employment opportunities, improved flood protection, and enhanced livelihood security for local residents.

### **5. IMPACT ASSESSMENT AND MITIGATION**

Potential environmental and social impacts were identified for both construction and operation phases. These include:

- Temporary dust, noise, and air emissions from machinery.
- Disposal of construction waste and spoil.
- Occupational and community health and safety risks; and
- Temporary traffic disruptions during material transport.

No permanent displacement or land acquisition is required.

Mitigation measures include:

- Implementation of Contractor's ESMP (CESMP) including site-specific management plans for waste, traffic, health and safety, and emergency response.
- Provision of Personal Protective Equipment (PPEs), first aid, and safety training.
- Controlled disposal of waste through licensed entities at designated locations.
- Restoration of disturbed surfaces post-construction.
- Continuous environmental and social monitoring and reporting; and
- Active stakeholder engagement and a functional Grievance Redress Mechanism (GRM) for workers and communities.

### **5.1 CUMULATIVE IMPACTS**

In line with the World Bank's ESS1 requirements, the potential for cumulative environmental and social impacts was assessed. The review confirmed that no significant concurrent or planned projects exist within the sub-project's area of influence that could interact with the proposed interventions. As the sub-project primarily involves rehabilitation of an existing flood protection embankment, the anticipated impacts are localized, temporary, and manageable through the prescribed mitigation measures. Overall, no adverse cumulative impacts are expected; rather, the sub-project will contribute positively by enhancing flood resilience, safeguarding agricultural lands and local communities, and reducing the risk of future flood-related damages.

## **6. INSTITUTIONAL ARRANGEMENTS**

Environmental and social management will be coordinated through the Project Implementation Unit (PIU) under the Irrigation Department, Government of Balochistan, with oversight by the World Bank. The Construction Contractor will implement the ESMP on-site, under supervision of the Construction Supervision Consultants (CSC) and periodic audits by the PIU.

Capacity building, training, and awareness programs will be conducted for project staff to ensure effective ESMP implementation. A dedicated Environmental and Social Specialist Team has been mobilized to oversee compliance and reporting.

## **7. GRIEVANCE REDRESS MECHANISM (GRM)**

A transparent and accessible Grievance Redress Mechanism will be operational throughout the project lifecycle to address concerns of both workers and community members. The GRM includes a Public Complaint Cell, Grievance Redress Committee (GRC) at site and PIU level, and clear timelines for acknowledgment, investigation, and resolution of complaints.

## **8. ENVIRONMENTAL AND SOCIAL MANAGEMENT BUDGET**

The ESMP includes an allocated environmental and social management budget, covering mitigation, monitoring, capacity building, awareness programs, and contingency measures. The cost of PKR 658,241 will be integrated into the overall project budget to ensure sustainable and compliant implementation.

## **9. CONCLUSION**

The Zain ul Abideen Khan Khoso Flood Protection Bund represents a critical intervention for enhancing flood resilience and protecting vulnerable communities in Sohbat Pur District. Implementation of this ESMP will ensure that environmental, social, and occupational risks are minimized and that construction and operation are conducted in a safe, sustainable, and socially inclusive manner. By integrating environmental safeguards, stakeholder engagement, and climate-resilient design, the project will contribute substantially to disaster risk reduction, livelihood

restoration, and the broader resilience-building objectives of the Integrated Flood Resilience and Adaptation Project (IFRAP) in Balochistan.

1

# INTRODUCTION

## 1 INTRODUCTION

### 1.1 PROJECT BACKGROUND

Balochistan, Pakistan's largest but driest province, has historically grappled with acute water scarcity, fragile irrigation networks, and inadequate flood protection systems. Its arid climate, rugged terrain, and dispersed rural settlements create inherent vulnerabilities in water management. The catastrophic monsoon floods of 2022 further exposed these weaknesses. Intense rainfall, combined with rapid runoff from steep hill catchments, overwhelmed natural drainage systems and caused widespread destruction of hydraulic infrastructure across the province.

The floods severely damaged dams, perennial and flood irrigation schemes, and flood protection structures. Irrigation supplies were disrupted, agricultural lands and crops were destroyed, and rural communities already living with limited resources were exposed to unprecedented flood risks. These impacts were compounded by systemic issues: aging and poorly maintained structures, outdated design standards, lack of flood protection coverage, weak institutional capacity, and insufficient weather monitoring, forecasting, and disaster preparedness. Collectively, these factors intensified both the scale of damages and the long-term vulnerability of communities.

Recognizing the urgent need for resilience, the Government of Pakistan, with financial support from the World Bank, initiated the Integrated Flood Resilience and Adaptation Project (IFRAP) under the broader Post-Flood 2022 Reconstruction Programme: Resilience Enhancement and Livelihood Diversification in Balochistan. IFRAP aims to rehabilitate and strengthen irrigation and flood management systems across the province, restoring agricultural productivity, protecting rural livelihoods, and embedding climate resilience into future infrastructure.

Initially, 55 sub-projects were included in the PC-I under the Integrated Flood Resilience & Adaptation Project (IFRAP). During initial surveys twenty (20) sub-projects couldn't meet the World Bank's selection criteria given in Project Appraisal Document (PAD), hence, dropped, whereas the remaining thirty-five (35) sub-projects were shortlisted for detailed design.

These Thirty five (35) shortlisted sub-projects as shown in Figure -1-1 below are located in 19 Districts of Balochistan, including Districts Awaran, Lasbela, Hub, Naseerabad, Jaffarabad, Sohbat Pur, Jhal Magsi, Harnai, Musakhel, Sibi, Kachhi, Killa Saifullah, Pishin, Ziarat, Kalat, Mastung, Kharan, Nushki, and Washuk. The portfolio consists of 11 dams /storage structures, 11 Perennial/ Flood Irrigation schemes, and 13 flood protection structures, which have been grouped in thirteen Packages. The interventions aim not only to rehabilitate damaged assets but also to integrate climate-resilient design standards capable of withstanding future extreme hydrological events.

### 1.2 PROJECT OBJECTIVES

The overall objectives of the "Post-flood 2022 Reconstruction Programme: Resilience Enhancement and Livelihood Diversification in Balochistan" is to support, finance and incentivize post-flood reconstruction, resilience enhancement and livelihood diversification initiatives of the Federal and Balochistan government with a primary and upfront focus on flood-ravaged and resource-constrained province of the country. The main objectives of the IFRAP (Irrigation Component) of the Programme are as under:

- i. Urgent rehabilitation of the Irrigation System for restoring irrigation water supplies to irrigate the command areas and to achieve desired production in the affected areas for reviving the livelihoods of the population.

- ### 1.3 PROJECT SCOPE

**MAP SHOWING IFRAP SCHEME (ZAINUL ABIDEEN DRAIN) IN BALUCHISTAN**

**Legend**

- Canals
- Dams
- Drains
- FTS
- PDS
- Protection Bunds
- Roads
- No Scheme
- Balochistan

**Packages**

- Package I
- Package II & III
- Package IV & VI
- Package IX
- Package V
- Package VII
- Package VIII
- Package X
- Package XI
- Package XII
- Package XIII

**Table of Projects:**

| No. | Description        | Location | Package   |
|-----|--------------------|----------|-----------|
| 1   | Sub-Project I      | Quetta   | Package I |
| 2   | Sub-Project II     | Quetta   | Package I |
| 3   | Sub-Project III    | Quetta   | Package I |
| 4   | Sub-Project IV     | Quetta   | Package I |
| 5   | Sub-Project V      | Quetta   | Package I |
| 6   | Sub-Project VI     | Quetta   | Package I |
| 7   | Sub-Project VII    | Quetta   | Package I |
| 8   | Sub-Project VIII   | Quetta   | Package I |
| 9   | Sub-Project IX     | Quetta   | Package I |
| 10  | Sub-Project X      | Quetta   | Package I |
| 11  | Sub-Project XI     | Quetta   | Package I |
| 12  | Sub-Project XII    | Quetta   | Package I |
| 13  | Sub-Project XIII   | Quetta   | Package I |
| 14  | Sub-Project XIV    | Quetta   | Package I |
| 15  | Sub-Project XV     | Quetta   | Package I |
| 16  | Sub-Project XVI    | Quetta   | Package I |
| 17  | Sub-Project XVII   | Quetta   | Package I |
| 18  | Sub-Project XVIII  | Quetta   | Package I |
| 19  | Sub-Project XIX    | Quetta   | Package I |
| 20  | Sub-Project XX     | Quetta   | Package I |
| 21  | Sub-Project XXI    | Quetta   | Package I |
| 22  | Sub-Project XXII   | Quetta   | Package I |
| 23  | Sub-Project XXIII  | Quetta   | Package I |
| 24  | Sub-Project XXIV   | Quetta   | Package I |
| 25  | Sub-Project XXV    | Quetta   | Package I |
| 26  | Sub-Project XXVI   | Quetta   | Package I |
| 27  | Sub-Project XXVII  | Quetta   | Package I |
| 28  | Sub-Project XXVIII | Quetta   | Package I |
| 29  | Sub-Project XXIX   | Quetta   | Package I |
| 30  | Sub-Project XXX    | Quetta   | Package I |
| 31  | Sub-Project XXXI   | Quetta   | Package I |
| 32  | Sub-Project XXXII  | Quetta   | Package I |
| 33  | Sub-Project XXXIII | Quetta   | Package I |
| 34  | Sub-Project XXXIV  | Quetta   | Package I |
| 35  | Sub-Project XXXV   | Quetta   | Package I |
| 36  | Sub-Project XXXVI  | Quetta   | Package I |

Figure 1-1: Location map showing the sites of sub-projects

#### 1.4 OBJECTIVES OF ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN (ESMP)

The Environmental and Social Management Plan (ESMP) has been prepared in compliance with Bank's Environmental and Social (E&S) Safeguard requirements including E&S Standards (ESS). ESMP provides a framework for implementing and managing the mitigation and monitoring measures recommended against the project activities. ESMP identifies environmental and social management measures to be implemented throughout the project. The purpose of the ESMP is to consider and develop adequate measures and controls to minimize and mitigate the potential environment and social risks to manage adverse impacts identified during the project implementation. The main objective of the ESMP is to ensure that anticipated environmental and

social impacts and risks are effectively managed during the construction, operation, and closure of the project. The ESMP specifies the mitigation measures which are to be implemented by the contractor.

This ESMP would be included in the tender/contract as an integral part of the bid document. The specific sections of ESMP such as introduction to IFRAP; regulatory and policy reviews; institutional and implementation arrangements; grievance redress mechanism; and, contractor requirements i.e. staffing, Contractors Environment and Social Management Plan (CESMP) and Health & Safety Plan (HSP) as part of this document. Data and information pertaining to the engineering activities have been provided in specific sections of this ESMP, i.e., engineering activities; environmental and social baselines (ambient air/noise/water quality), impact and mitigation, community and stakeholder consultation, and implementation budget. The ESMP has been completed in accordance with provincial and national legislation, and the World Bank's Operational Policies (OPs). Stepwise objectives, which can be contractual obligations of contractor are as under:

**Familiarity with World Bank Safeguard Policies:** This is a donor funded project, contractor must be familiar with the World Bank Environmental and Social Commitment Plan (ESCP) and other safeguards policies, guidelines, and standards.

**Site selection for Facilities:** To ensure the environmental performance, site selection for different project facilities e.g., campsites, batching and/or crushing plant, workshop and or machine yard need to be carefully selected as per the guidelines. All the activities within these facilities along with construction work on site also need to be in line with the requirements.

**Human Resource:** ESMP identifies the human resource required for environmental compliance, better reporting and enhanced environmental performance. **Mitigation Measures:** Mitigation measures identified against each activity will maximize potential project benefits and control negative impacts.

**Climate Resilient infrastructure:** ESMP emphasizes to combine grey and green infrastructure. Contractor needs to integrate Environmental measures during the construction process for a sustainable, resilient, and socially inclusive execution.

**Defining roles and responsibilities of Project Actors:** ESMP also defines liabilities of project actors like CC, Construction Supervision Consultant (CSC).

**Environmental Trainings:** Need and frequency of Environmental trainings to the contractor and other project staff is also comprehended and included in the plan.

**Environmental Budgeting:** ESMP also calculates overall budget estimate along with its breakup for sustainable execution.

**Documentation requirements:** This also explains the requirements for communication and reporting during the project life.

**Inspection and Supervision:** This document also mentions inspection and monitoring frequency by CC, CSC, implementing body and donor agency to make sure compliance to ESMP document.

**Contractor ESMP:** The contractor will be required to prepare CESMP inclusive:

- Campsite management plan
- Waste Management Plan
- Occupational Health & Safety Plan

- Emergency Response Plan
- Traffic Safety and Diversion Management Plan
- Solid & Liquid Waste Management Plan
- Air Quality, Noise & Dust Management Plan
- Biodiversity Management Plan (Flora & Fauna)

## 1.5 APPROACH AND METHODOLOGY

Table 1-1: Methodology for ESMP Preparation

| Sr. No. | Component                                   | Description                                                                                                                                                                                                                                                                                                                                                                         |
|---------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | Data Collection & Literature Review         | Sub-project documents including ESMF of the project and other published and unpublished information/data was gathered.                                                                                                                                                                                                                                                              |
| 2       | Review of Legal and Institutional Framework | Reviewed all applicable national environmental and social regulations, including World Bank (WB) Environmental and Social Framework (ESF), IFC Performance Standards and assessed institutional capacity, roles and responsibilities at all stages of the project.                                                                                                                  |
| 3       | Baseline Environmental & Social Survey      | Carried out environmental and social baseline studies. For example, ambient air, water (surface, ground), soil, noise, socio-economic and ecological environment etc.), identified sensitive receptors and consulted with the local communities.                                                                                                                                    |
| 4       | Impact Assessment & Analysis                | Determined likely impacts, both positive and negative during implementation and operation and classified impacts as direct, indirect, long-term, short-term and cumulative.                                                                                                                                                                                                         |
| 5       | Mitigation and Enhancement Measures/Options | Planned the mitigation options like pollution reduction, biodiversity management, waste management, occupational and community health & safety plan and other mandatory options for continual environmental and social improvement and applied the mitigation hierarchy at different stages of the project. Further, also included enhancement strategies for positive E&S impacts. |
| 6       | Stakeholder Consultation & Disclosure       | Carried out the initial participatory meetings with affected communities and other stakeholders and integration of feedback into final ESMP will continue during the project, as ESMP being the standalone and living document.                                                                                                                                                     |
| 7       | ESMP Document                               | Tabulated the mitigation measures in detail and monitoring plan has been formulated, including the methodology, frequency and responsibilities. Training needs and capacity building and stakeholder engagement and grievance mechanism has been incorporated. Furthermore, budget and resource allocation for E&S monitoring has been made part of the plan.                       |

## 1.6 SUB-PROJECT AREA

The sub-project irrigation scheme Zain ul Abideen Flood Protection Bund is located in district Sohbatpur, located 28°15'54.80"N,68°14'50.27"E. Nearby villages are Zain ul Abideen, Bostan, Saindad, dur abad, bhagar, Rahim khan and Nasir Khan. The nearest village is 0.5 Km away from the subproject area, details are given in table 1.2. The proposed scheme of Zain ul Abideen is homogenous compacted earth fill Bund, with a proposed length of 2250 meters,

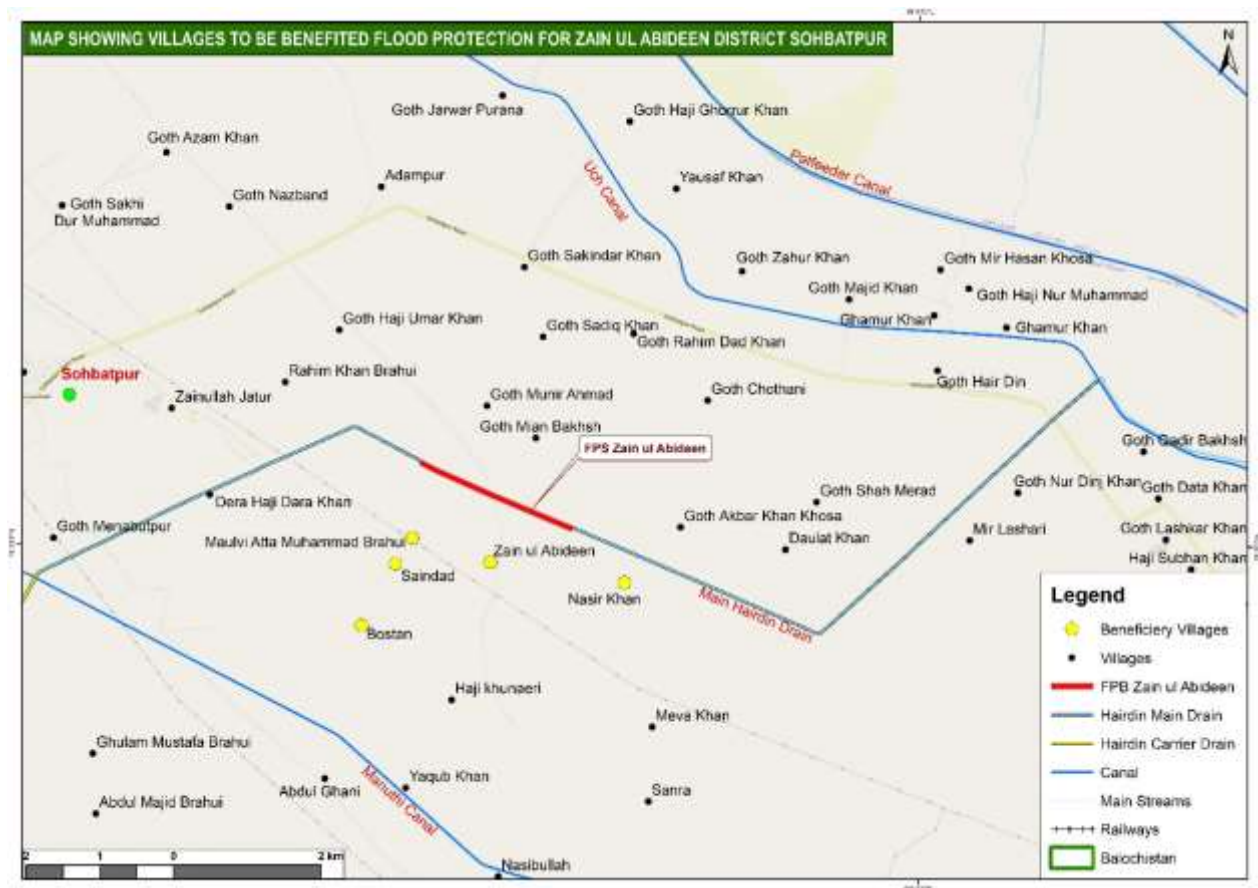


Figure 1-2: Map showing proximity to the project site

Table 1-2: Distance of nearby villages from the Zain ul Abideen FPB

| Village Name                          | Number of Households in Village | Total Population | Distance from the subproject Area |
|---------------------------------------|---------------------------------|------------------|-----------------------------------|
| Dur Abad                              | 50                              | 370              | 0.5 km                            |
| Zain ul Abideen                       | 70                              | 500              | 0.5 km                            |
| Got Muhammad Mukheri                  | 20                              | 250              | 1 km                              |
| <b>Total Household and Population</b> | <b>140</b>                      | <b>1120</b>      |                                   |

The sub-projects are intended exclusively for flood protection purposes, focusing on the rehabilitation and strengthening of the existing damaged bund to ensure effective flood management and safeguard adjoining areas from potential inundation.

The proposed interventions will help protect agricultural lands and nearby settlements, promote sustainable land use, and significantly enhance the socio-economic resilience and safety of local communities. The proposed Subproject does not lie at or near by any protected area, conservation area, wetlands, buffer zone and vulnerable area.



Figure-1-3: Photographs of damaged Zain ul Abideen Flood Protection Bund

## 1.7 PROPOSED ACTIVITIES

The proposed intervention involves the reconstruction and strengthening of the flood protection bund along the Hairdin Main Drain (RD 15+800 to RD 18+050) near Village Zain-ul-Abideen Khan Khoso in District Sohbat Pur. The objective of these works is to enhance flood resilience and safeguard the surrounding settlements, agricultural lands, and infrastructure from recurring flood hazards.

The rehabilitation works include re-sectioning and raising of the existing embankments, restoration of eroded and weak sections using compacted cohesive earth fill, and improvement of overall embankment geometry to meet the required design standards. To ensure structural stability and erosion control, stone pitching will be provided along the slopes, while gabion apron protection will be installed at the toe of the bund to prevent scouring during high-flow conditions.

These interventions are designed to function both as a hydraulic channel section and flood protection structure (FPS), ensuring efficient conveyance of floodwater through the Hairdin Drain while simultaneously protecting the adjoining areas from lateral flooding and embankment breaches.

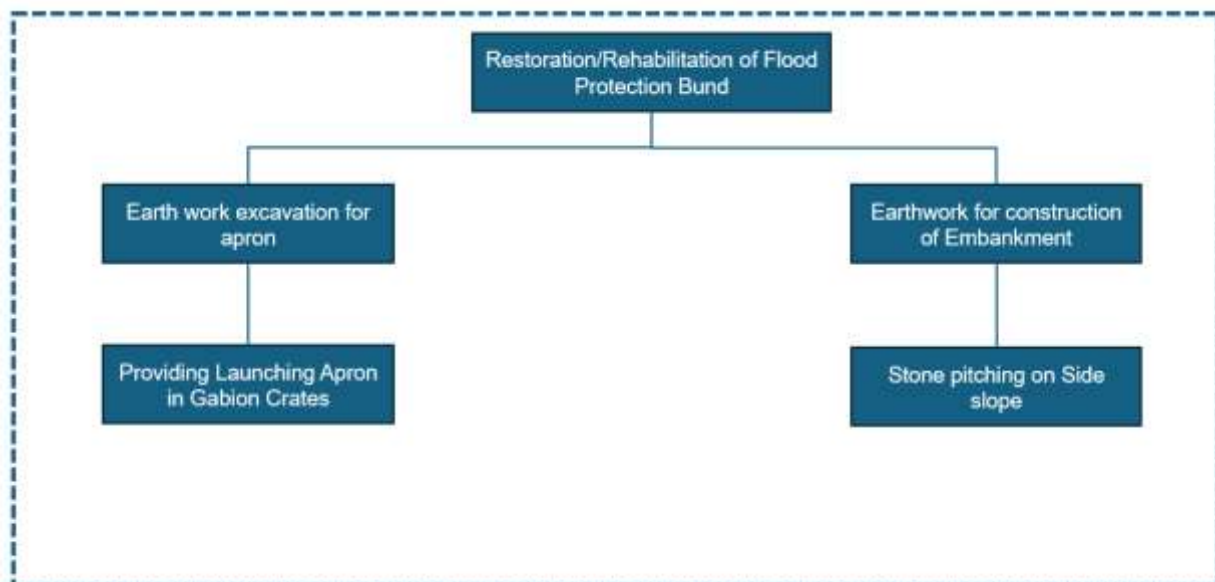


Figure 1-4: Project Activities

Table 1-3: List of Construction Activities

| Sr. No | Work Activities                | List of Associated Construction Activities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1      | Pre-construction activities    | <ul style="list-style-type: none"> <li>Joint Site survey by the Consultant's and Contractor teams.</li> <li>Selection of suitable site for establishment of contractor's camp</li> <li>Construction of contractor camp</li> <li>Relevant staff deployment for start of work</li> <li>Mobilization of machinery and equipment</li> </ul>                                                                                                                                                                                         |
| 2      | During Construction Activities | <ul style="list-style-type: none"> <li>Site clearance/Grubbing, clearance and stripping</li> <li>Dismantling / Removal of existing damaged bund, if required</li> <li>Re-sectioning and construction of earthen bund (both berms) as per construction drawings</li> <li>Compaction of earth bund in layers</li> <li>Dressing of top width and side slopes</li> <li>Providing and laying stone pitching of required thickness on bund side slopes</li> <li>Earthwork excavation for providing apron along toe of bund</li> </ul> |

| Sr. No | Work Activities | List of Associated Construction Activities                                                                                                                                  |
|--------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |                 | <ul style="list-style-type: none"> <li>Providing and laying apron at toe of bund</li> <li>Providing &amp; weaving G.I wire and placing stones in G.I wire crates</li> </ul> |

## 1.8 Workplan / Implementation Schedule of the Project Activities & ESMP

### 1.8.1 Bidding and Contract Award

The implementation of the Reconstruction of Flood Protection Bund near Zain ul Abideen Khan Khoso under IFRAP Package-V will commence with the bidding and procurement process, which is expected to be completed within 3 months. This stage will include preparation and issuance of bidding documents, tender floating, bid evaluation, approvals, contract award, agreement signing, and issuance of commencement instructions in accordance with applicable procurement procedures and donor guidelines.

### 1.8.2 Contractor Mobilization

Following award of contract, contractor mobilization activities will be carried out over a period of 2 months. This stage will include establishment of site offices, field laboratories, storage yards, deployment of manpower, machinery, construction equipment, utility arrangements, and logistical facilities required for smooth execution of the flood protection works.

### 1.8.3 Construction of Reconstruction of Flood Protection Bund near Zain ul Abideen Khan Khoso

#### 1.8.3.1 Site Clearance and Preliminary Works

Site clearance and preliminary activities will be completed within 2 months and will involve removal of vegetation, debris, unsuitable materials, obstructions, and preparation of the work areas required for embankment reconstruction and associated flood protection works.

#### 1.8.3.2 Excavation Works

Excavation works will be undertaken over a period of approximately 8 months and will include excavation for embankment formation, foundation preparation, removal of unsuitable materials, and development of the required flood protection bund profile in accordance with approved design drawings and specifications.

#### 1.8.3.3 Filling and Embankment Formation

Filling and embankment formation activities will continue for approximately 8 months. Suitable material will be placed, spread, and shaped to achieve the required embankment geometry, crest levels, side slopes, and flood protection standards.

#### 1.8.3.4 Berm Formation and Embankment Improvement

Berm formation and embankment strengthening works will be carried out over 6 months. Suitable fill material will be placed and shaped along critical reaches to improve flood protection, slope stability, and maintenance accessibility.

#### 1.8.3.5 Compaction and Earthwork Stabilization

Compaction and stabilization of earthworks will be completed within 6 months through moisture conditioning, layer-wise compaction using mechanical compactors and rollers, and quality control testing to achieve the required density and long-term structural performance.

### **1.8.3.6 Foundation Excavation for Protection Works**

Foundation excavation works for protection structures will be undertaken over a period of 4 months. This activity will include excavation required for stone pitching, gabion aprons, toe protection works, and other appurtenant flood protection structures.

### **1.8.3.7 Filter Layer and Foundation Preparation**

Preparation of filter layers and foundation bedding works will be completed within 3 months to provide stable and properly prepared bases for slope protection and scour protection works.

### **1.8.3.8 Slope Protection Works (Stone Pitching)**

Stone pitching works, including placement of filter material and slope stabilization measures, will continue for approximately 5 months in accordance with approved hydraulic and structural design requirements.

### **1.8.3.9 Gabion Apron and Protection Works**

Gabion apron works, toe protection measures, scour control works, and associated flood protection structures will be executed over a period of approximately 10 months to enhance hydraulic stability and protect the embankment against erosion during flood events.

### **1.8.3.10 Scour Protection and Finishing Works**

Construction of scour protection measures, finishing works, dressing of embankment slopes, and final stabilization works will continue for about 5 months at vulnerable locations to provide protection against scour, seepage, and erosion during high-flow conditions.

## **1.8.4 Environmental and Social Management Plan (ESMP) Implementation**

Implementation of the Environmental and Social Management Plan (ESMP) will remain a continuous activity throughout the entire project duration of approximately 24 months. The activities will include dust suppression, waste management, occupational health and safety compliance, environmental mitigation measures, community consultations, operation of the Grievance Redress Mechanism (GRM), environmental trainings, and safeguard compliance monitoring.

### **1.8.4.1 Environmental Monitoring and Reporting**

Environmental monitoring and reporting activities will also continue throughout the 24-month implementation period to ensure compliance with environmental safeguard requirements, regulatory obligations, and approved ESMP provisions.

## **1.8.5 Shop Drawings and Quality Assurance Documentation**

Preparation and approval of shop drawings, method statements, quality assurance documentation, quality control plans, environmental compliance records, and material testing reports will be carried out over a period of 4 months prior to and during execution of the works.

## **1.8.6 Progress Reporting and Project Coordination**

Progress reporting, coordination meetings, construction supervision, environmental monitoring, safeguard compliance reporting, and project management activities will continue throughout the

entire implementation period of 24 months to ensure timely execution and effective monitoring of project activities.

### 1.8.7 Project Completion and Demobilization

Final inspection, testing, preparation of as-built drawings, submission of completion reports, safeguard closure documentation, and contractor demobilization activities will be completed within 2 months following completion of the construction works.

A detailed work plan / activity schedule is attached as **Annexure-Y**.

## 1.9 STUDY TEAM

Table 1-4: Consultant's Team

| Sr. No. | Name               | Position                                           |
|---------|--------------------|----------------------------------------------------|
| 1       | Mr. Alamgir Khan   | Team Leader                                        |
| 2       | Mr. Idrees Khan    | Environment specialist                             |
| 3       | Mr. Sanaullah Khan | Water Management Specialist                        |
| 4       | Mr. Shoaib Suleman | Design Engineer                                    |
| 5       | Ms. Almas Khurshid | Environmental Specialist                           |
| 6       | Mr. Naqeeb Ullah   | Social Specialist                                  |
| 7       | Mr. Shakoor Kakar  | Socio Economic baseline and Consultation           |
| 8       | Ms. Sidra          | Gender Specialist                                  |
| 9       | Mr. Zarak Khan     | Environment field staff (Baseline Data collection) |
| 10      | Waqar Ahmed        | Surveyor                                           |
| 11      | Engr. Safdar Chana | Conducted Environmental Monitoring/Labs            |

2

# LEGAL AND POLICY FRAMEWORK

## **2. LEGAL AND POLICY FRAMEWORK**

### **2.1 LEGAL AND APPLICABLE REQUIREMENTS**

ESMP is developed as per the World Bank Safeguard Policies, Environment and Social Standards (ESS), Environmental and Social Commitment Plan (ESCP). Environmental and Social Management Framework (ESMF) of the project and relevant provision of Environmental Policies laid out by the Government of Pakistan along with the national and international guidelines. The Project proponent will be required to adhere to these regulations throughout the course of the proposed Project.

### **2.2 ENVIRONMENTAL & SOCIAL STANDARDS (ESS) AND NATIONAL REGULATIONS**

The sub-project has been carefully reviewed against the World Bank's Environmental and Social Standards (ESS1–ESS10) and the corresponding national regulatory framework, including the Balochistan Environmental Protection Act (BEPA 2012), Pakistan Environmental Protection Act, 1997 (PEPA), and other relevant sectoral laws such as the Factories Act 1934, Land Acquisition Act 1894, and Antiquities Act 1975. This cross-referencing ensures that the Environmental and Social Management Plan (ESMP) is fully compliant with both international requirements and national legislation. By integrating World Bank ESS obligations with Pakistan's regulatory provisions, the sub-project demonstrates a commitment to responsible environmental management, protection of community and worker rights, and transparent stakeholder engagement. This dual compliance framework provides assurance that the project will be implemented sustainably, with due consideration for people, biodiversity, and the environment.

#### **2.2.1 World Bank Environmental and Social Framework (ESF)**

The World Bank Environmental and Social Standards (ESSs) are a set of policies designed to ensure that projects financed by the World Bank are environmentally and socially sustainable. These standards are part of the Environmental and Social Framework (ESF), which has been in effect since October 01, 2018. The ESF replaces the earlier safeguard policies and introduces a more comprehensive and integrated approach to risk management in development projects. Ten ESS are as under;

.

Table 2-1: Relevant World Bank ESS and Key Gaps with the National Framework

| Environmental and Social Standards (ESS)                                             | Project Relevance                                                                                                                                                                                                                                                                                                       | Relevant National Provincial Regulations and Laws                                                                                                                                                                      | Gaps Identified in the Context of Local Laws                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Gaps Addressed in ESMF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ESS1:</b> Assessment and Management of Environmental and Social Risks and Impacts | <b>Relevant:</b> The Project activities will involve a wide range of civil works from medium to relatively large scale which could have potential environmental and social risks <sup>17</sup> . The ESMF and the related site-specific E&S instruments will be implemented throughout the project to comply with ESS1. | <ul style="list-style-type: none"> <li>• Balochistan Environmental Protection Act, 2012</li> <li>• Guidelines for Environmental Assessment, Pakistan EPA</li> <li>• Review of IEE and EIA Regulations, 2020</li> </ul> | <p>The criteria mentioned in the Act for classifying environmental and social impact/risk is different than in the ESF. The categorizes the risk level of a project indirectly – mostly by project type and size. Furthermore, it does require commitment from the proponents for E&amp;S measures implementation but not in the form of a separate environmental and social commitment plan. The different methods and tools (ESIA, environmental and social audit, cumulative impact assessment, ESMP, ESMF, regional and sectoral ESIA, SESA etc.) for environmental and social impact assessments, referenced in the ESF, are not part of the National and Provincial legislation. The ESF highlight to consider the environmental and social risks and impacts associated with primary suppliers and disadvantaged or vulnerable groups while the local relevant laws do not.</p> <p>ESS-1 specifically mentions disadvantaged or vulnerable groups, the Act does not touch upon this theme directly.</p> | <p>E&amp;S risk categorization of the Augmentation Works has been done on the basis of ESS-1 guidelines but also aligned with the BEPA requirements. The environmental and social assessment will be/is carried out as per ESS-1 for the proposed Project. In addition, Resettlement Policy Framework (RPF), Labor Management Procedures (LMP) and Stakeholder Engagement Plan (SEP) have been prepared as part of this Project. Mitigations proposed in this ESMF and the other E&amp;S tools (e.g. RPF, LMP and SEP) have taken into consideration the marginalized and vulnerable groups.</p> |

| Environmental and Social Standards (ESS)   | Project Relevance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Relevant National Provincial Regulations and Laws                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Gaps Identified in the Context of Local Laws                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Gaps Addressed in ESMF                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ESS2</b> – Labor and Working Conditions | <b>Relevant:</b> The Project will involve direct workers, contracted workers, primary supply workers and community workers. Locally hired labor will be preferred where possible, except for skilled workers who may not be available in project locations. The project may create some labor related risks and impacts, which may include lack of skills and compliance with relevant laws and regulations, unsafe and unhealthy working conditions, and GBV/SEA/SH. To comply with the ESS-2, a Labor Management Procedure (LMP) and SEA/SH Action Plan will be developed as a part of the project. | <ul style="list-style-type: none"> <li>• Balochistan Occupational Safety and Health Act, 2022</li> <li>• Employment of Child Act 1991</li> <li>• Balochistan Employment of Children (Prohibition &amp; Regulation) Act, 2021</li> <li>• The Balochistan Bonded Labour System (Abolition) Act, 2021</li> <li>• Factories Act 1934</li> <li>• Balochistan Factories Act, 2021</li> <li>• Workmen Compensation Act 1923 and Rules 1961.</li> <li>• Balochistan Payment of Wages Act, 2021</li> <li>• The Balochistan Minimum Wages Act, 2021</li> <li>• The Balochistan Shops and Establishment (Amendment) Act, 2022</li> <li>• The Balochistan Employees' Social Security Act, 2022</li> <li>• Road Transport Workers Ordinance, 1961</li> <li>• The Balochistan Industrial Relations Act, 2022</li> </ul> | <p>National and Provincial laws regarding labour rights address most of the requirements of the ESS2.</p> <p>However, the implementation of these laws and the management of certain issues addressed under ESS-2, such as OHS, GBV/SEA and Violence Against Children (VAC), prohibition of children in hazardous work and child labor in general and protection against discrimination of religious minorities (many formal sector workers belong to religious minority groups) are not done effectively as detailed coverage of certain requirements is partial.</p> <p>There is no specific requirement for employers to establish a workers' grievance mechanism except grievance redress mechanisms are available within relevant government departments for citizens to lodge complaints i.e., chief minister complaint cell and citizen portal.</p> | <p>All the relevant risks and measures have been considered in this ESMF. Labor Management Procedures (LMP) have been developed for the proposed Project to mitigate the risks related to OHS issues. The LMP will be noted in the legal agreement and in the Environmental and Social Commitment Plan (ESCP).</p> <p>All of this has been done in accordance with the provincial and national laws and ESS-2 requirements.</p> |

| Environmental and Social Standards (ESS)                                  | Project Relevance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Relevant National Provincial Regulations and Laws                                                                                                                                                                                                               | Gaps Identified in the Context of Local Laws                                                                                                                                   | Gaps Addressed in ESMF                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ESS3</b> – Resource Efficiency and Pollution Prevention and Management | <b>Relevant:</b> The project is planned to have significant investment in re-construction of infrastructure which may cause generation of generate solid waste, dust issues, soil erosion, water pollution and include use of construction materials (like asphalt, sand, cement, gravel stone etc.). However, the project is adopting a 'building back better' approach with plans to include nature based solutions (such as wetland restoration, vegetative riverbank protection, and other watershed protection measures), green techniques and includes activities for restoration and sustainable use of natural resources. Resource efficiency and pollution prevention measures have been included in the ESMF to comply with requirements of ESS3. | <ul style="list-style-type: none"> <li>• National Energy Efficiency and Conservation Act, 2015</li> <li>• Balochistan Environmental Protection Act, 2012</li> <li>• Pakistan Climate Change Act, 2017</li> <li>• National Environmental Policy, 2005</li> </ul> | National and provincial laws address most of the requirements of ESS3, particularly on pollution prevention                                                                    | The project is planned to have significant investment in re-construction of infrastructure which may cause generation of generate solid waste, dust issues, soil erosion, water pollution and include use of construction materials. Resource efficiency and pollution prevention measures have been included in the ESMF to comply with requirements of ESS3. |
| <b>ESS4</b> – Community Health and Safety                                 | <b>Relevant:</b> The project may cause community health and safety risks during civil works which include exposure to physical hazards, the traffic and road safety hazards,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>• Balochistan Occupational Safety and Health Act, 2022</li> <li>• Pakistan Penal Code, 1860</li> <li>• National Disaster Management Act, 2010</li> <li>• Balochistan Environmental</li> </ul>                            | Local laws address most of the requirements of the ESS-4. However, detailed coverage has not been provided in the local laws (national and provincial) in comparison to ESS-4. | Relevant measures have been included in the ESMF to ensure the compliance with ESS4 that community health and safety is adequately protected.                                                                                                                                                                                                                  |

| Environmental and Social Standards (ESS)                                              | Project Relevance                                                                                                                                                                                                                                                                                                                                                                                                                                             | Relevant National Provincial Regulations and Laws                                                                               | Gaps Identified in the Context of Local Laws                                                                                                                                                                                                                                                                                                                                                                              | Gaps Addressed in ESMF                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                       | potential of GBV/SEA/SH risks from presence of project workers, spread of different transmittable communicable diseases, exploitation of economically disadvantaged or otherwise vulnerable individuals by project staff involved in the implementation of the programs, or by other project beneficiaries etc. Relevant measures have been included in the ESMF to ensure the compliance with ESS4 that community health and safety is adequately protected. | Protection Act, 2012                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                     |
| <b>ESS5</b> – Land Acquisition, Restrictions on Land Use and Involuntary Resettlement | <b>Relevant:</b> Land acquisition and resettlement is not anticipated, However, Resettlement Policy Framework (RPF) will be developed prior to commencement of civil works or infrastructure activities to respond to risks and impacts related to land acquisition and resettlement (if any), land-use, temporary economic and/or physical displacement, Anti Encroachment Drives/forced evictions along with relevant management                            | <ul style="list-style-type: none"> <li>Land Acquisition Act 1894</li> <li>The Land Acquisition (Amendment) Act, 2009</li> </ul> | <p>Screening is limited to physical survey of land, there is no consideration of social risks in the LAA.</p> <p>No formal stakeholder consultations required by the LAA, or in host communities in case of resettlement.</p> <p>No provisions are made for vulnerable groups in the LAA No provisions for livelihood restoration and improvement, and no additional assistance beyond compensation for land acquired</p> | RPF has been prepared as a part of this project, to address issues related to land acquisition, voluntary land donation, restrictions on land use and involuntary resettlement (if any) ESS5. Moreover, a GRM has been established. |

| Environmental and Social Standards (ESS)                                                       | Project Relevance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Relevant National Provincial Regulations and Laws                                                                                                                                                                                                                  | Gaps Identified in the Context of Local Laws                                                                                                                                                                                                                                           | Gaps Addressed in ESMF                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                | and mitigation measures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                    | and loss of livelihood in the LAA<br>Land assets and structures are valued at market value in the LAA, instead of replacement cost in the ESS.<br><br>No compensation for non-titleholders in the LAA, while ESS5 requires all parties affected by land acquisition to be compensated. |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>ESS6</b> – Biodiversity Conservation and Sustainable Management of Living Natural Resources | <b>Relevant:</b> Most of the infrastructure investments are rehabilitation works and anticipated to exist within the existing built environment. However, it is assumed that some forests and protected areas have been damaged by floods. The activities proposed under component-4 are proposed to support watershed management and restore damaged rangelands which is expected to overall benefit the biodiversity of the area. Physical investments that could have significant adverse impacts to natural and critical habitats will be excluded from the project. | <ul style="list-style-type: none"> <li>• National Forest Policy, 2015</li> <li>• The Forest Act, 1927</li> <li>• Balochistan Wildlife preservation protection conservation and management Act 2014 (BWPPCMA)</li> <li>• The Balochistan Forest Act 2022</li> </ul> | Local laws address most of the requirements of the ESS-6 except the categorization of habitats (natural, critical and modified).                                                                                                                                                       | Most of the infrastructure investments are rehabilitation works and anticipated to exist within the existing built environment. The activities proposed under component-1 are proposed to support watershed management and restore damaged rangelands which is expected to overall benefit the biodiversity of the area. Physical investments that could have significant adverse impacts to natural and critical habitats will be excluded from the project. |

| Environmental and Social Standards (ESS)                                                                    | Project Relevance                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Relevant National Provincial Regulations and Laws                                                                                                                           | Gaps Identified in the Context of Local Laws                                                                                                                                                                                                                                                                                                                                                                                                             | Gaps Addressed in ESMF                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ESS7</b> – Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities | <b>Not relevant:</b> Pakistan's only recognized Indigenous Peoples, the Kalash, live in three valleys in the Chitral district of Khyber Pakhtunkhwa, which is not included in the Project Area.                                                                                                                                                                                                                                                                                       | NA                                                                                                                                                                          | There is no law, national or provincial, dealing with the rights and protection of Indigenous Peoples                                                                                                                                                                                                                                                                                                                                                    | This ESS is not relevant as no indigenous people are found in the Project Area. Pakistan's only recognized Indigenous Peoples, the Kalash, live in 3 valleys in Chitral district of KP province, and Chitral is not included in the Project districts. |
| <b>ESS8</b> –Cultural Heritage                                                                              | <b>Relevant:</b> Since project investments include significant amount of civil works which includes excavation, ESMF will include chance find procedures and screening checklist which will guide the handling of cultural heritage discovered during commencement of Project activities. In addition, in case there are impacts recorded on a notified cultural heritage within the project implementation, a Cultural Heritage Management Plan (CHMP) will be prepared accordingly. | <ul style="list-style-type: none"> <li>• Antiquities Act, 1975</li> <li>• The Antiquities Act, 1975 (amended in 1990)</li> <li>• Balochistan Antiquity Act, 2014</li> </ul> | <p>The provincial legislation is silent regarding the Development of Physical Cultural Resource Management Plan.</p> <p>There is no provision related to tangible and intangible cultural properties.</p> <p>The provincial legislation is silent about the disclosure of information regarding cultural heritage due to the safety or integrity of the cultural heritage or would endanger sources of sensitive information from public disclosure.</p> | This ESMF however, has developed "Chance Find Procedure" to be followed during project implementation in case of any chance find physical culture resource.                                                                                            |
| <b>ESS 9</b> -Financial Intermediaries                                                                      | <b>Not relevant:</b> This standard is not relevant, as Financial Intermediaries will not be used.                                                                                                                                                                                                                                                                                                                                                                                     | NA                                                                                                                                                                          | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                       | NA                                                                                                                                                                                                                                                     |
| <b>ESS10</b> – Stakeholder Engagement and                                                                   | <b>Relevant:</b> Effective stakeholder engagement and                                                                                                                                                                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• Review of IEE and EIA Regulations, 2000</li> <li>• Balochistan Environmental</li> </ul>                                            | Stakeholder engagement in public sector development projects is not                                                                                                                                                                                                                                                                                                                                                                                      | The SEP and GRM have been developed as a part                                                                                                                                                                                                          |

| Environmental and Social Standards (ESS) | Project Relevance                                                                                                                                                                                                                                                                                                                   | Relevant National Provincial Regulations and Laws                 | Gaps Identified in the Context of Local Laws                                                                                                                                                                                                                                                           | Gaps Addressed in ESMF                                                                                                                                                       |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disclosure                               | information disclosure will be crucial to the project. This ESMF follows a structured approach to stakeholder engagement and public outreach that is based upon meaningful consultation and disclosure of appropriate information. A standalone SEP has been prepared, which will be periodically updated through the Project life. | Protection Act, 2012<br>• Guideline for Public Consultation, 1997 | done effectively. The regulations do not demand continued stakeholder engagement after the NOC has been granted, leading to a potential disconnect between the project and the affected people during construction and operations phases. Also, there is no proper mechanism to record the grievances. | of this ESMF as per ESS10. The SEP outlines the process and frequency of stakeholder engagement at all project stages, and also establishes the contours of an effective GRM |

## 2.2.2 World Bank Occupational Health & Safety (OHS) Guidelines

Contractor will follow the Occupational Health and Safety Guidelines of International Finance Corporation (IFC) and World Bank Group during project's implementation stage. These guidelines are as under:

### Occupational Health and Safety:

- General Facility Design and Operation
- Communication and Training
- Physical Hazards
- Chemical Hazards
- Radiological Hazards (if any)
- PPEs
- Special Hazard Environments
- Monitoring

### Community Health and Safety:

- Water Quality and Availability
- Structural Safety of Project Infrastructure
- Life and Fire Safety (LFS)
- Traffic Safety
- Transport of Hazardous Materials
- Disease Prevention
- Emergency Preparedness and Response

### Construction and Decommissioning:

- Environment
- Occupational Health and Safety
- Community Health and Safety

## 2.2.3 National/Provincial Guidelines and Policies

The ESMP also complies with the national/provincial environmental requirements defined through Pakistan Environmental Protection Act (PEPA) 1997 and subsequent Balochistan Environmental Protection act, 2012. The ESMP will consider the natural environment (air, water, and land); human health and safety; social aspects, transboundary and global environmental aspects including climate change and its implications, and induced impacts as well as the cumulative impacts of other development projects in the area.

### National Environmental Policy (NEP), 2005

The National Environmental Policy (NEP) identifies a set of sectoral and cross-sectoral guidelines to achieve its goal of sustainable development. Section 5 of the policy commits for integration of environment into development planning as instrument for achieving the objectives of National Environmental Policy. Management of proposed project will ensure that the project will not add to the aggravation of the environmental issues identified in NEP and mitigation measures will be adopted to minimize or avoid any contribution of the project in these areas.

### National Conservation Strategy (NCS)

The National Conservation Strategy (NCS) has 68 specific programs in 14 core areas in which policy intervention is considered crucial for the preservation of natural and physical environment. The core areas that are relevant in the context of the proposed project are pollution prevention and abatement, restoration of rangelands, conserving biodiversity, supporting plantations, and the preservation of cultural heritage.

**Pakistan Climate Change Act 2017**

The Project activities will involve a wide range of civil works from medium to relatively large scale, which would contribute to the significant use of natural resources, and generation of waste. The proposed project will ensure efficient use of resources through implementation of measures. This act is applicable in the sub project.

**National Disaster Management Act, 2010**

The Subproject involves re-construction of infrastructure, affected in Balochistan by the 2022 floods. The aim of the project is to build back better with improved infrastructure based on climate risks, improved engineering design standards, and improved construction and maintenance to enhance resilience. However, this act is applicable in the proposed sub project.

**Balochistan Wildlife Preservation Protection Conservation and Management Act 2014 (BWPPCMA)**

Direct impacts on biodiversity and natural resources is not anticipated as most of the infrastructure investments are rehabilitation works and anticipated to exist within the existing built environment. Physical investments that could have significant adverse impacts to natural and critical habitats will be excluded from the project.

**Balochistan Antiquity Act, 2014**

The Project investments include significant amount of civil works which includes excavation, the site specific ESMP will include chance find procedures and screening checklist which will guide the handling of cultural heritage discovered during commencement of Project activities. In addition, in case there are impacts recorded on a notified cultural heritage within the project implementation, a Cultural Heritage Management Plan (CHMP) will be prepared accordingly.

**Balochistan Employment of Children (Prohibition & Regulation) Act, 2021**

Project interventions will involve different contractors and sub-contractors for the execution of the project; however, children may not be involved in direct or indirect employment with the contractors. Hence, the act is applicable in the proposed sub project.

**Balochistan Payment of Wages Act, 2021**

The workforce (direct workers, contracted workers, primary supply workers and community workers) in the proposed sub project will be involved during implementation stage. The project proponent will respect the provision of relevant sections of this act.

**The Protection against Harassment of Women at the Workplace Act, 2010**

In case of females are involved in the project activities, this act will be applicable. However, the proponent of the project will ensure the relevancy of this act to involvement of women.

**Balochistan Factories Act, 2021**

The sub project will involve in multi-dimensional works and the workers (direct workers, contracted workers, primary supply workers and community workers) which may involve in occupational and health related risks during construction phase. Hence, this act is applicable to provide safety to the workers.

**2.2.4 International Treaties and Conventions**

Pakistan is signatory to several multilateral environmental and social agreements. The proposed sub-project is obliged to respect the applicable agreements. The following are the relevant international treaties and conventions to which Pakistan is a party.

Table 2-2: International Treaties

| Sr. No | Environmental Obligations                                                   | Social Obligations                                                                              |
|--------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| 1      | Convention on the Conservation of Migratory Species of Wild Animals         | International Covenant on Economic, Social and Cultural Rights                                  |
| 2      | Convention on International Trade in Endangered Species (CITES)             | Convention on the Elimination of all Forms of Discrimination against Women, 1979.               |
| 3      | United Nations Convention on Biological Diversity (UNCBD)                   | Discrimination (Employment and Occupation) Convention, 1958 (No. 111).                          |
| 4      | United Nations Framework Convention on Climate Change (UNFCCC)              | Elimination of forced and compulsory labour (conventions 29 and 105)                            |
| 5      | Convention concerning the Protection of World Culture and Natural Heritage  | Abolition of child labour (conventions 138 and 182)                                             |
| 6      | Kyoto Protocol to the Convention United Nations Framework on Climate Change | International Covenant on Civil and Political Rights, 1966.                                     |
| 7      | Stockholm Convention on Persistent Organic Pollutants                       | Elimination of discrimination in respect of employment and occupation (conventions 100 and 111) |
| 8      | Convention on Wetlands of International Importance                          | Hours of Work (Industry) Convention, 1919 (No. 1)                                               |
| 9      | Paris Agreement, 2015.                                                      | Indigenous and Tribal Populations Convention, 1957 (No. 107)                                    |
| 10     | Vienna Convention, 1985                                                     | Convention for Safeguarding the Intangible Cultural Heritage, 2003.                             |

3

## DESCRIPTION OF THE SUBPROJECT

The Zain ul Abideen Khan Khoso Drain has a total length of 2,250 m and is designed for a discharge capacity of 4.80 cumecs. The proposed section includes a drain depth of 2.80 m, bottom width of 2.80 m, side slopes of 1.5H:1V, berm height of 1.50 m, berm width of 4.0 m, and a bed slope of 0.000254 m/m. The selected hydraulic and geometric parameters are intended to ensure adequate flow conveyance, channel stability, and protection against erosion and overtopping.

Zain ul Abideen khan Flood Protection Bund is located in Sohbatpur District. Location map of Zain ul Abideen khan is shown in Figure 3.1.



The soil around the site of flood protection bund near Zain ul Abideen is mostly silty clay and sandy clay. The alluvium forms a flat to gently sloping plain, which is highly susceptible to flooding and surface runoff during monsoon rains.



Figure-3-2: Alluvial deposits along the washed-out bund.



Figure-3-3: Alluvial deposits (Clayey Silt, Silty Clay and Gravely Silt) along the drain area



Figure 3-4: Surface geological map of the proposed FPB near Zain ul Abideen Khan Khosa.

### 3.2 DESIGN CRITERIA

### 3.3 RAW MATERIAL SOURCE AND AVAILABILITY

Sources of different raw materials required for restoration of flood protection bund are given in the Table 3.2 below.

Table 3-1: Availability of construction material

| Sr. No. | Raw material                               | Availability in the surrounding                                                                                                                                                                                                                                                                                                        |
|---------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | Borrow material                            | The contractor will identify the site and get that approved by CSC.                                                                                                                                                                                                                                                                    |
| 2       | Stones for retaining walls and rip rap.    | The contractor will identify the most viable site for stones and CSC will approve accordingly.                                                                                                                                                                                                                                         |
| 3       | Stone for sub-base, aggregate base course, | The site will be identified by the CC.                                                                                                                                                                                                                                                                                                 |
| 4       | Sand                                       | The contractor will identify the viable site for sand duly approved by the CSC.                                                                                                                                                                                                                                                        |
| 5       | Water for compaction and sprinkling.       | The availability of water for construction activities is expected to pose challenges at the Subproject site. However, the Contractor will address this issue with the approval of the CSC. Construction water will be sourced either from tube wells or from surface water, as both options are accessible within the Subproject area. |
| 6       | Cement & Reinforcement materials           | Since Zain ul Abideen Khan is in the Sohbat pur district, the access of market and availability of material will not be difficult. However, the CC will be responsible with the approval of CSC.                                                                                                                                       |

#### 3.3.1 Borrow Area

The borrow area map of Package-V highlights the distribution and availability of borrow materials required for construction, including clay, sand, aggregates and stone pitching, in the project region.

The borrow sources are well-distributed, ensuring reliable material supply both at site and from nearby off-site locations.

### **3.3.1.1 Clay Sources**

Multiple clay borrow sources are available at or near the project sites, such as Hairdin Drain (S-1), 1-R Drain (S-2).

These sources are located within the alluvial plains and consist of fine-grained cohesive soils suitable for embankment construction and canal works.

Their presence at site significantly reduces haulage distance and transportation costs, making them highly feasible for bulk material requirements.

### **3.3.1.2 Sand & Aggregate Sources**

Coarse borrow materials such as sand and aggregates are available from upland and riverine sources outside the immediate project area.

Major sources include Bareja (S-7) located 130–192 km from Naseerabad and Jaffarabad districts, Dhadar (S-8) located about 187 km away, and the Gogi River (S-9) about 151 km away.

These sources provide durable aggregates and sandy material required for concrete works, filters, and other structural components. However, due to longer leads, their use will require careful planning of transportation logistics.

### **3.3.1.3 Geotextiles**

Geotextiles are recommended to overcome the possible erosion of fill materials in the flood protection bunds during the flood time. Geotextiles can provide protection to underlying materials from external forces, such as erosion and abrasion. They help maintain the integrity of structures, prevent soil loss, and ensure long-term stability of the structures in various environments.

### **3.3.1.4 Pitching and Riprap**

The stones required for pitching, rip rap and gabion slope protection are present at the nullah bed. The natural rock outcrops are also located 130 Km to 200 Km from the proposed sites of the structures.

### **3.3.1.5 Summary**

The map confirms adequate availability of borrow materials for the project. Clay is abundantly available within proximity to the sites, ensuring cost-effective supply for embankments and canal lining. Sand and aggregate sources are located at relatively greater distances in upland river channels, but they remain accessible for fulfilling structural construction requirements.

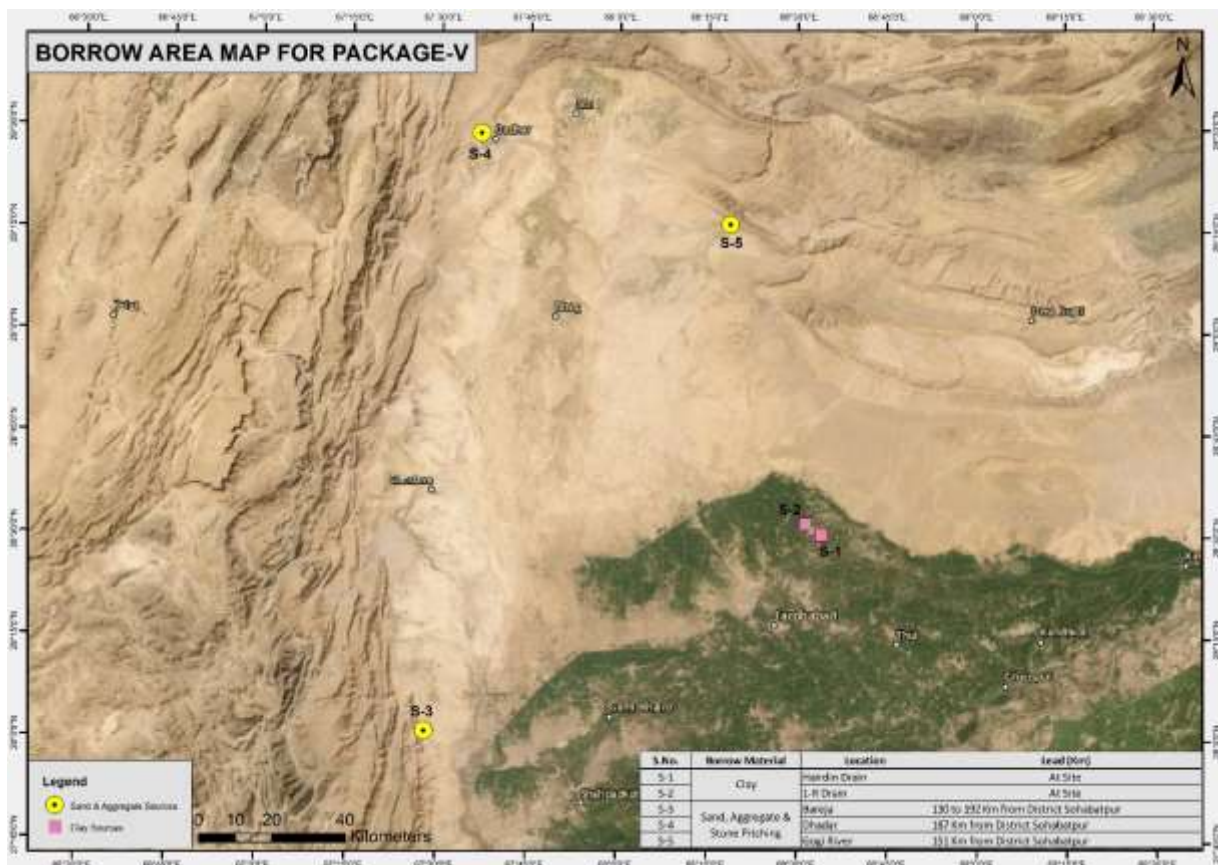


Figure-3-5: Borrow Area & Material map of the Zainul Abideen Khan flood protection bund

### 3.3.2 Contractor's Camp

The criteria for contractor's camp site will be 500m away from any residential dwelling and sensitive receptors. Since the Subproject patches has no population in its 100 m radius, and it may be called as away from social, physical and ecological sensitivity. Therefore, the establishment of contractor's camp will not be problem for the contractor.

The CC will be contractually bound to maximize employment of the local people of Zain ul Abideen khan and nearby villages. The machinery and equipment will be accommodated in the open yard or rented building in either Zain ul Abideen khan, Goth Bara or nearby area that should have enough storage and haulage space with ample moving and working space.

Approximately 30 labours will be required for construction of the proposed project of zain ul Abideen khan flood protection works. The priority will be given to local area inhabitants for skilled and unskilled labour jobs. The majority of labour needs (Skilled and Unskilled) will be met from the local area. It is anticipated that approximately 75% of the workforce will be from the sub-project area while some 25% of labour (skilled) would be hired from outside the sub-project area. This labour influx may have an impact on social norms, culture, and economy of the area. The proposed Zain ul Abideen Flood Protection Scheme will require only a single labor camp for its implementation.

### 3.3.3 Standards for the Construction of Workers Accommodation

Following are the best practices for the construction of contractor labor/workers accommodation:

| Activity                            | Guidelines                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Provision of Camp Facilities</b> | <p>Provide;</p> <ul style="list-style-type: none"> <li>• Lined washing areas</li> <li>• In-house common entertainment facilities.</li> <li>• Septic tanks and soaking pits; Solid waste management.</li> <li>• Fire prevention and firefighting equipment</li> <li>• Separate from living quarters, sheltered kitchen area.</li> <li>• Safe drinking water supply which meets the national standards</li> <li>• The minimum bed space allocated per person should be 4 feet in width and 6 feet in length. While observing Covid 19- social distancing SOPs, the distance from bed to bed shall be at least 06 feet.</li> <li>• Appropriate protection against heat, cold, damp noise, fire, and disease-carrying animals, in particular insects.</li> <li>• Lighting and electricity supply</li> <li>• Ventilation facility with availability of electricity, fans</li> <li>• Roads and paths</li> <li>• An adequate number of toilets and sanitary fittings shall be provided. (1 toilet, 1 hand wash basin, 1 bathroom with bench per 10 persons to be provided.</li> <li>• Provide plain cemented washable floor for easy cleaning in the kitchen and living areas Hygienic sanitary facilities and sewerage system. Provide separate latrines and bathing places for males and females with total isolation by the wall or by location. Female toilets should be marked in a language understood by the persons using them to avoid miscommunication.</li> <li>• Treatment facilities for sewerage of toilet and domestic wastes</li> <li>• Pave the internal roads with at least haring-bond bricks to suppress dust and to work against possible muddy surfaces during monsoon.</li> </ul> |
| <b>Cooking</b>                      | <ul style="list-style-type: none"> <li>• Provide a sheltered and ventilated kitchen area that is separated from living quarters</li> <li>• Provide fuel to the construction camps for their daily purpose use, to discourage them to use fuelwood or biomass.</li> <li>• Make available alternative fuels like natural gas or kerosene to the workforce to prevent them from using biomass for cooking.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Health and Hygiene</b>           | <ul style="list-style-type: none"> <li>• Provide adequate drainage facilities throughout the camps to ensure that disease vectors' habitats (stagnant water bodies, puddles) do not form.</li> <li>• Place display boards at strategic locations within the camps containing messages on the best hygienic</li> <li>• Provide initial health screening of the laborers coming from outside areas.</li> <li>• Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work.</li> <li>• Provide adequate health care facilities within campsites.</li> <li>• Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint a paramedic on site.</li> <li>• Provide a transport facility for the laborers during an emergency to be transported to the nearest hospitals</li> <li>• Provide GBV, SH, SEA and HIV awareness programming, including STI (sexually transmitted infections) and HIV information, education, and communication for all workers.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

| Activity                | Guidelines                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Safety</b>           | <ul style="list-style-type: none"> <li>• Availability of fire extinguishers inside the camps</li> <li>• Provide the appropriate type of fire-fighting equipment suitable for the construction camps</li> <li>• Display emergency contact numbers clearly and prominently in strategic places in camps.</li> <li>• Encourage the use of flameproof material for the construction of the labor housing/site office. Ensure that these houses/rooms are of sound construction and capable of withstanding storms/cyclones</li> <li>• Communicate the roles and responsibilities of labourers in case of an emergency in the monthly meetings with contractors.</li> <li>• Provide appropriate security personnel (police /home guard or private security guards) and enclosures to prevent unauthorized entry into the camp area.</li> <li>• Evacuation plan and evacuation drills in labour camps</li> </ul>                                                                                                                                                          |
| <b>Drainage</b>         | <ul style="list-style-type: none"> <li>• Regularly inspect and maintain drains</li> <li>• Provide a drainage system to transfer sewage effluent to the septic tank with a soakage pit of adequate capacity</li> <li>• Divert natural rainfall-runoff around the site location</li> <li>• Provide adequate storm-water drainage capacity to prevent the accumulation of stagnant water following heavy rains</li> <li>• Build new shallow v drainage lines as required for wastewater/rainwater run off to the nearby recipient water body</li> <li>• The presence of stagnant water is a factor in the proliferation of potential disease vectors such as mosquitoes, flies, etc., and must be avoided and away from campsites and the community.</li> </ul>                                                                                                                                                                                                                                                                                                        |
| <b>Site Restoration</b> | <ul style="list-style-type: none"> <li>• Backfill waste and sewage pits</li> <li>• Consider seeding the area to provide an initial protective canopy</li> <li>• Give prior notice to the labourers before demolishing their camps/units</li> <li>• Maintain the noise levels within the national standards during demolition activities</li> <li>• Reuse the camp material to the maximum extent. Dispose of remaining debris at the designated waste disposal site.</li> <li>• To restore the site to its original condition or an agreed condition with the landowner defined before the commencement of the works (in writing).</li> <li>• Dismantle and remove from the site all facilities established within the construction camp, including the perimeter fence and lockable gates after the construction work.</li> <li>• Decommission and fill drinking water wells (unless otherwise arranged with the landowner)</li> <li>• If possible, dismantle camps in phases as the work decreases (do not wait for the completion of the entire work)</li> </ul> |

### 3.4 MACHINERY YARD AND OTHER FACILITIES

A repair workshop is essential to maintain many vehicles and other machinery required for project construction. The contractor may establish own workshop at a place approved by the PIU prior to its establishment. The machinery maintenance and equipment yard will be a designated place to be used only for workshop purposes. No construction vehicles will be allowed to park on the road.

### 3.5 SECURITY ARRANGEMENTS AND HEALTHCARE FACILITIES

Given the prevailing security condition in the project area, security staff is important. Adequate security will be required at contractor's camp, material store, equipment yards and location of the

work in progress on the work site. Coordination will be necessary with nearby law enforcing agencies.

With many labours and employees working in the proposed project of zain ul Abideen FP, small accidents are expected to take place on all construction sites. A dispensary will be set by the CC within the base camp. The dispensary will be operated by the CC with full time paramedics. For major cases the patients will be shifted to the District Hospital under a pre-coordinated arrangement. Almost all the unskilled labour will be employed from the local area Zain ul Abideen khan or Goth Bara (Sohbat pur). This will also keep the camps less pressurized and manageable.

### 3.5.1 Site Security

The mitigation measures and security recommendation are provided in the security management plan and will be implemented to strengthen the security of staff, workers and project facilities. The following mitigation measures will be implemented at all work sites.

Table 3-2: Impact Characterization-Site Security

| Nature | Duration   | Reversibility | Likelihood | Consequence | Impact Significance |
|--------|------------|---------------|------------|-------------|---------------------|
| Direct | Short Term | Irreversible  | Rare       | Severe      | High adverse        |

#### 3.5.1.1 Mitigations

All the work executed by or on behalf of the contractor (sub-contractor) in the performance of the work shall be in accordance with high standards of safety at all times and shall, inter alia, comply with local laws, and ensure strict adherence. The following mitigation measures shall be adopted by the contractor and project to deal with site security issues and emergencies at site:

#### 3.5.1.2 Management Steps

The following are the management steps will be adhered:

- The project shall hire a security manager (Individual Consultant) who will supervise the implementation of recommended security measures and will help the project develop further plans policies and procedures related to security for the project.
- Where possible it will be ensured that the locals or those conversant with the area and customs must be hired for the guarding duties and thorough background checks will be done by the security company before deploying any guards at the site.
- It shall be ensured that physical measures such as a fence, barriers, gates, warning signage, and surveillance system are in place to prevent access to or passage through work areas, camps, and offices.
- The project shall ensure that the security personnel should be stationed at the entry and exit points of the sites, offices, and camps around the clock.
- Perimeter walls and entry points to all facilities should be well-lit at night and where electricity is not available solar/generator-backed-up lights can be used.
- The contractor will issue cards to the staff which will be checked at the entry points. The record of all the visitors will be maintained and will be checked by the OHS staff.
- The contractor shall maintain communication through employer with local police and other law enforcement agencies in the area about his construction activities especially if the construction area is near any sensitive place and movement of staff.
- In case of any suspicious activity observed at the camp or worksite, the contractor staff shall immediately inform about the situation to the management and private security personnel. The private security personnel will immediately observe, report, and record the suspicious activity.

- In case of emergency, the private security personnel and site/camp management will contact police control, police station and patrolling parties of law enforcement agencies in the respective area to tackle the issue.
- The contractor shall not permit unauthorized person to enter the working site or camp areas. Only authorized persons will be allowed to enter the work site and in the camps.
- The contractor shall prepare emergency evacuation procedures under their health and safety management plan. Training should be provided to all staff on different emergency situations and drills should be conducted periodically.
- The emergency contact numbers of police department, fire department, nearby hospitals, rescue department shall be displayed at the camp sites and work areas.
- The project has developed a grievance redressal mechanism for the project to resolve complaints of public and project people. A public complaint center (PCC) and a grievance redressal committee has been established for this project. The public and project staff can register their complaints related to social issues, security issues and other aspects related to project in the complaint centre. Their complaint will be received and resolved within a given time frame. The complaints which were not resolved by PCC will be forwarded to grievance redressal committee (GRC) for resolution.

### **3.5.1.3 Emergency Preparedness and Response Procedures**

#### **i. Emergency Evacuation & Transfer**

- The Contractor will nominate an incident response team which will be headed by HSE Manager. This team can be activated by verbal communication or radio. This will be the most rapid response in the camps and on site.
- In case of emergency, the emergency disaster siren will be blown to alert the staff and stop the work immediately. The security staff will ensure that all project personnel and workers leave the site by a safe route. The assembly area shall be marked in main camp area and work sites.
- Information related to (key persons to be contacted & telephone numbers) medical support during an emergency shall be made available to all on the project site to save time in communication.
- A close liaison will be maintained by the health and safety officer with a nearby hospital and Emergency response centers for assistance during an emergency.

#### **ii. Emergency Drills**

- All site personnel/members (PIU/ Contractor) will follow emergency drills that shall be periodically tested through exercises. The frequency of these drills shall be every quarter which includes fire Fighting, medical evacuation and patient transfer. The schedule of these drills shall be planned on-site in accordance with site activities and be made part of the contractor health and safety plan.
- The finding of the observations and debrief notes of the emergency drills shall be recorded. The health and safety officer shall analyze the findings and identify any remedial actions required.
- The emergency procedure shall be updated from time to time to reflect observations made.
- Training shall be conducted on regular basis for emergency response teams.
- During toolbox talk, the supervisor must emphasize how to raise an emergency and emergency response protocol associated with the work shall also be discussed with it.

#### **3.5.1.4 Residual Impact**

By applying the above mitigations, the impact significance shall be medium during the duration of the sub project implementation.

### **3.6 LABOUR REPORTING OFFICE**

Designated labour gathering areas will be established along access roads and within the work bases of the contractor's camp. These areas will be used for worker pick-and-drop, emergency assembly, and routine briefings. Each location will be clearly marked, kept clean and unobstructed, and equipped with a public-address system when required.

The Labour Reporting Office, however, will be located separately - close to and adjacent to the contractor's main camp office-to facilitate easy movement, supervision, and daily reporting.

In addition, the contractor will ensure that all labour gathering points are safe, well-maintained spaces where workers can assemble for transport, respond during emergencies, or receive awareness and toolbox trainings.

4

## **BASELINE DESCRIPTION**

## 4. BASELINE DESCRIPTION

This chapter provides the description of physical, ecological and socioeconomic conditions of the proposed subproject. The baseline has been prepared considering the primary data collection tools and published and un-published information/data.

### 4.1 CORRIDOR OF IMPACT (COI)

The Corridor of Impact (COI) comprises the subproject Right of Way (RoW) and the surrounding areas where both positive and negative impacts are anticipated during project execution, including construction camps, borrow pits, and disposal sites. For the purpose of impact assessment and baseline survey, a buffer zone of 500 m (250 m on each side of the centreline) has been defined as the primary Area of Influence and sensitive receptor zone.

As illustrated in Figure 4.1, this 500 m buffer (hatched area within the red circle) was assessed to capture potential direct impacts such as dust, noise, and vibration, as well as indirect and cumulative effects. The survey findings indicate that within this defined COI, no settlements, public infrastructure (e.g., schools or hospitals), or environmentally sensitive features were identified.

Accordingly, the ESMP adopts this 500 m COI to ensure a practical yet comprehensive framework for impact assessment and management, while maintaining compliance with applicable environmental and social safeguard requirements.

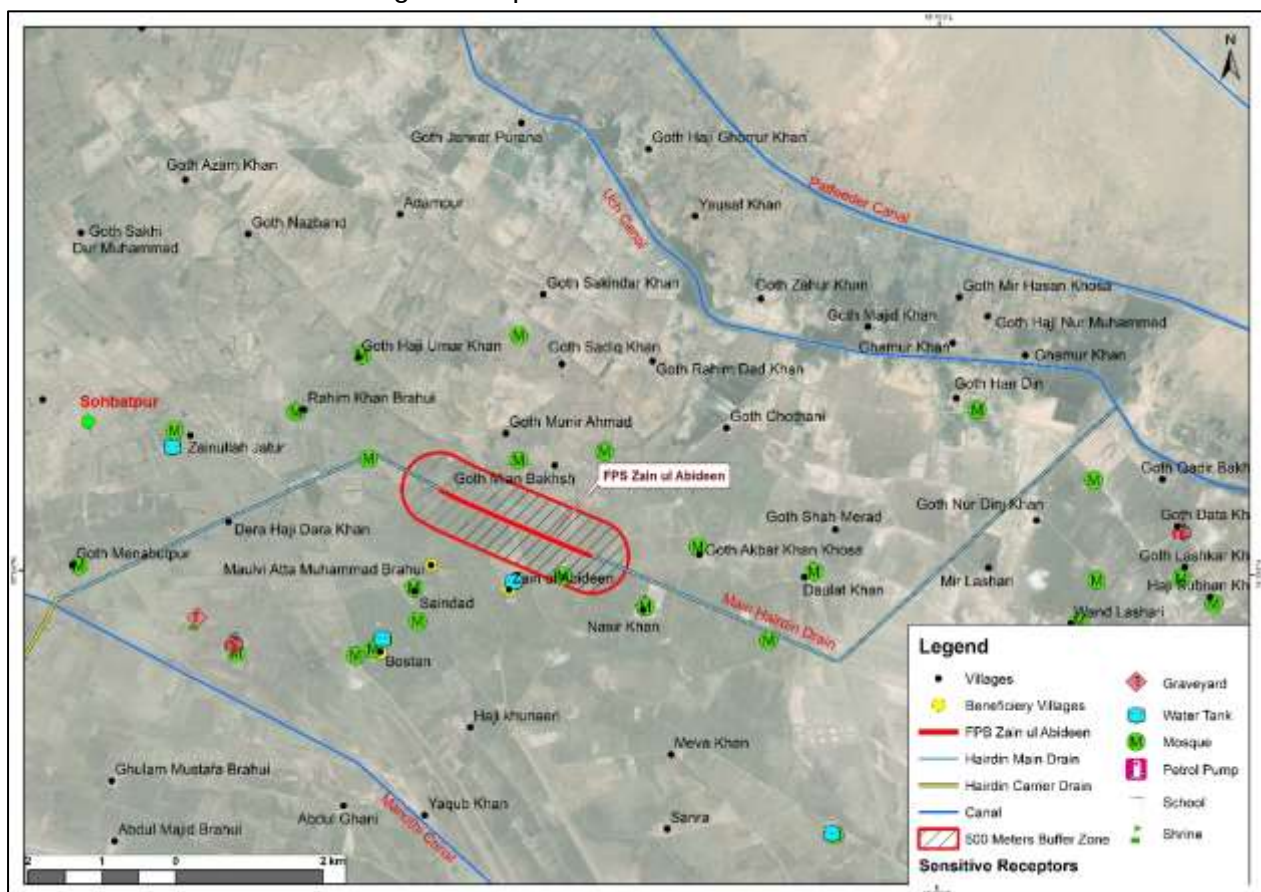


Figure-4-1: Corridor of Impact & Buffer Zone

### 4.2 PHYSICAL ENVIRONMENT

A socio-economic baseline provides a systematic assessment of the prevailing social and economic conditions within a project area. It establishes a benchmark for measuring future changes and evaluating project impacts. This baseline is crucial for identifying community

vulnerabilities, guiding appropriate mitigation measures, ensuring the equitable distribution of project benefits, and enabling consistent monitoring over time.

As part of the Environmental and Social Management Plan (ESMP) preparation, a comprehensive socio-economic baseline study was carried out for the Zain Ul Abideen Khan Khosa sub-project. The assessment captured demographic characteristics, livelihood patterns, and the status of essential infrastructure. An updated field survey conducted on August 2025 further evaluated current conditions and assessed the socio-economic effects of the 2022 catastrophic floods.

For this sub-project, 50 household members were interviewed individually, including 30 men and 20 women, representing approximately 50% of the male and female household members in the Zain Ul Abideen Khan area. In total, 50 out of 140 households were surveyed, covering a population of 1,120 individuals.

#### **4.2.1 Land and Water Resources**

Water availability in District Sohbatpur is primarily sustained through the Pat Feeder Canal system, associated irrigation channels, seasonal flood flows, and local drainage networks, which collectively support agricultural production and rural livelihoods in the area. Agriculture is the dominant land use within the district, and the availability of irrigation water is essential for crop cultivation and economic activities. The Public Health Engineering Department (PHED) is responsible for providing access to safe and potable drinking water for rural and urban populations through various water supply schemes operating within the district.

#### **4.2.2 Climate Risks and Vulnerabilities in the Project Area**

The project area of the Zain ul Abideen Khan Khoso Flood Protection Bund is highly vulnerable to climate-induced extreme rainfall events, flash floods, and high flood discharges resulting from seasonal storm runoff. Existing flood protection embankments are exposed to erosion, scour, slope instability, and structural deterioration due to recurrent flood events, making them susceptible to overtopping, embankment breaches, and localized flooding during high-flow conditions. Repeated flood events also accelerate bank erosion, loss of embankment material, and increased maintenance requirements of the flood protection infrastructure.

#### **4.2.3 Seismology**

Seismic activity in Pakistan has been the source of destructive earthquake. These earthquakes have originated from sedimentary cover at shallow depth as well as from deep basement rocks. These earthquakes have been recorded and there are two kinds of records; historic or pre-instrumented data consisting of felt intensity based on recorded damage and instrumented data collected by various national and international seismic networks. Based on earthquake data and geological faults, the Building Code of Pakistan (BCP) has prepared a map showing seismic zones of Pakistan.

The maximum magnitude of each source is calculated, and Peak Ground Acceleration (PGA) values based on the maximum credible earthquake of the relevant source are obtained. According to the Building Code of Pakistan (BCP-2021), the project structures are situated in a Seismic Zones with Peak Ground Acceleration (PGA) in the range of 0.20 to 0.33g for scheme no. 01, 0.28 to 0.33g for scheme no. 02, 0.24 to 0.33g for scheme no. 03 and 0.28 to 0.33g for scheme no. 04.

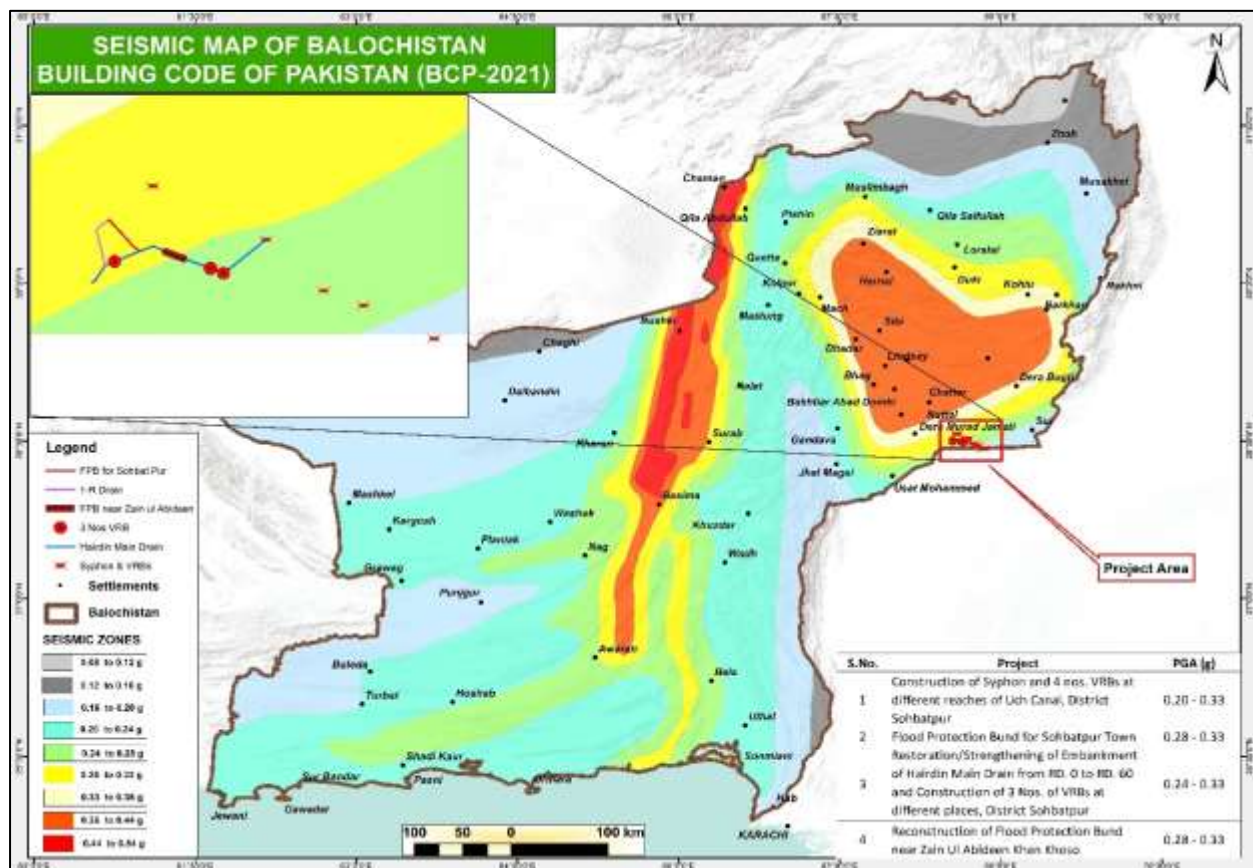


Figure 4-2: Seismic map of Balochistan showing the location of the sub-project area.

#### 4.2.4 Hydrology

The hydrological studies are intended to estimate the different hydrological parameters of sub-projects. These studies form the basis for estimation of water availability and the hydraulic design of works proposed under the Project. The watershed characteristics of the proposed structures are as follows.

Table 4-1: Characteristics of catchment area

| Sr. No | Scheme Name                                                            | Catchment Area Km <sup>2</sup> | Length of Longest Stream (m) | Slope (m/m) |
|--------|------------------------------------------------------------------------|--------------------------------|------------------------------|-------------|
| 1      | Reconstruction of Flood Protection Bund Near Zain ul Abideen Khan Khos | 425.68                         | 89.34                        | 0.0099      |

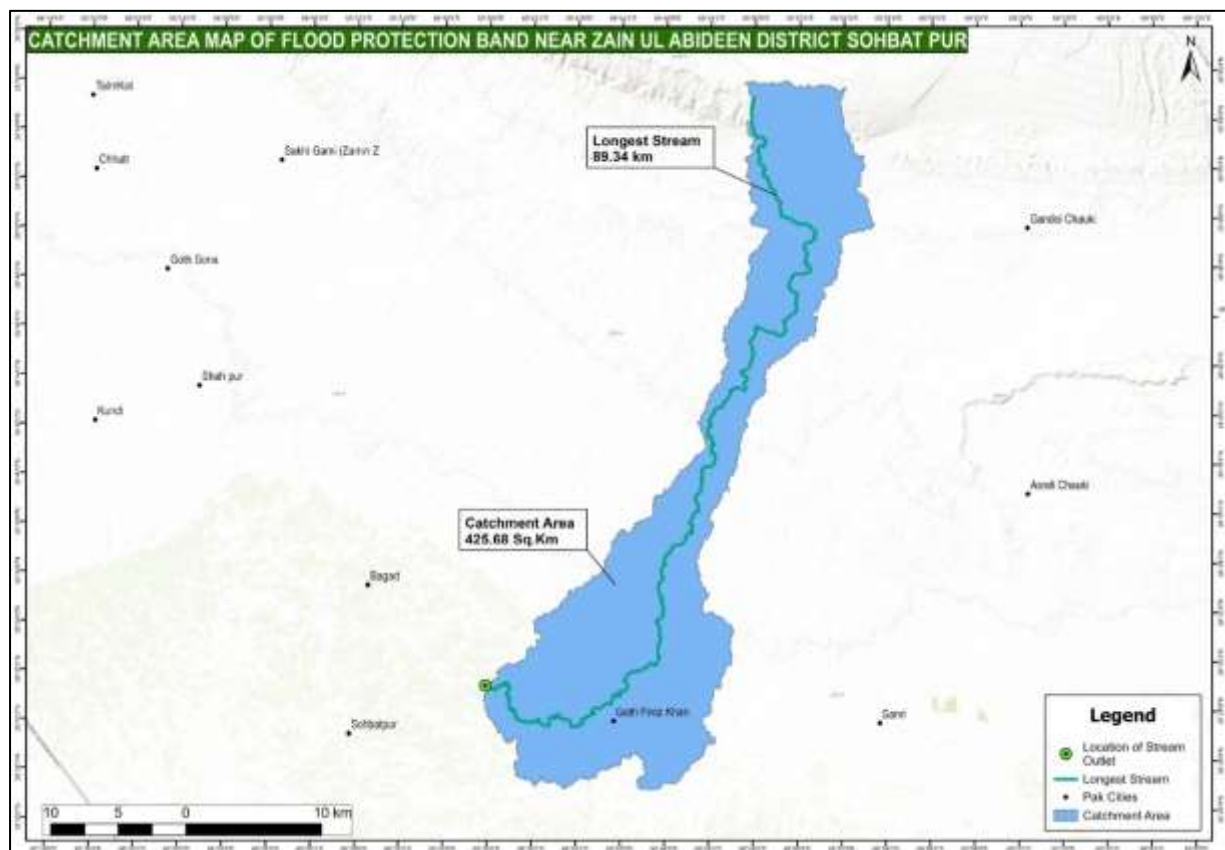


Figure 4-3: Location and catchment area map of flood embankment of Flood Protection Bund near Zain Ul Abideen Khan Khoso

#### 4.2.5 Ambient Air Quality

The ambient air quality pollutant testing was carried at the location of flood protection bund. Overall air quality is fair. The pollutants monitored are particulate matter (PM<sub>10</sub>), nitrogen oxides (NO), fine particles, Sulphur dioxide (SO<sub>2</sub>), carbon monoxide (CO), coarse particles, ammonia. The tested pollutants were compared with the NEQs and World Bank standards and found within the permissible limits. This reflects that ambient air quality in these areas is generally very good. The recorded levels were associated with vehicular traffic was found where roads pass nearby of the sub-project area.

Table 4-2: Air Quality Analysis

| Parameters        | Temp. | NO<br>( $\mu\text{g}/\text{m}^3$ )          | NO <sub>2</sub><br>( $\mu\text{g}/\text{m}^3$ ) | SO <sub>2</sub><br>( $\mu\text{g}/\text{m}^3$ ) | CO<br>( $\text{mg}/\text{m}^3$ )            | PM <sub>2.5</sub><br>( $\mu\text{g}/\text{m}^3$ ) | PM <sub>10</sub><br>( $\mu\text{g}/\text{m}^3$ ) | SPM<br>( $\mu\text{g}/\text{m}^3$ )          | O <sub>3</sub><br>( $\text{mg}/\text{m}^3$ )     |
|-------------------|-------|---------------------------------------------|-------------------------------------------------|-------------------------------------------------|---------------------------------------------|---------------------------------------------------|--------------------------------------------------|----------------------------------------------|--------------------------------------------------|
| NEQS & BEQS Limit | -     | 24 hrs<br>(40<br>$\mu\text{g}/\text{m}^3$ ) | 24 hrs<br>(80<br>$\mu\text{g}/\text{m}^3$ )     | 24 hrs<br>(120<br>$\mu\text{g}/\text{m}^3$ )    | 08 hrs<br>(40<br>$\mu\text{g}/\text{m}^3$ ) | 24 hrs<br>(5<br>$\text{mg}/\text{m}^3$ )          | 24 hrs<br>(150<br>$\mu\text{g}/\text{m}^3$ )     | 24 hrs<br>(500<br>$\mu\text{g}/\text{m}^3$ ) | 01 hrs<br>(130<br>$\mu\text{g}/\text{m}^3$ )     |
| WHO Limit         | -     | -                                           | 24 hrs<br>(25<br>$\mu\text{g}/\text{m}^3$ )     | 24 hrs<br>(40<br>$\mu\text{g}/\text{m}^3$ )     | 08 hrs<br>(08<br>$\mu\text{g}/\text{m}^3$ ) | 24 hrs<br>(15<br>$\text{mg}/\text{m}^3$ )         | 24 hrs<br>(45<br>$\mu\text{g}/\text{m}^3$ )      | -                                            | Peak<br>season<br>(60 $\mu\text{g}/\text{m}^3$ ) |
| Time              |       | Results                                     |                                                 |                                                 |                                             |                                                   |                                                  |                                              |                                                  |
| 10:00AM           | 35    | 19.3                                        | 34.1                                            | 5.35                                            | 0.061                                       | -                                                 | -                                                | -                                            | -                                                |
| 11:00AM           | 35    | 16.8                                        | 36.7                                            | 4.61                                            |                                             | 25.8                                              | 89.2                                             | 115                                          | 6                                                |
| 12:00PM           | 35    | 19                                          | 37.2                                            | 4.39                                            |                                             | 22.6                                              | 92.3                                             | 114.9                                        | -                                                |
| 01:00PM           | 35    | 20.2                                        | 39.8                                            | 6.5                                             | 0.036                                       | 25                                                | 105.1                                            | 130.1                                        | -                                                |
| 02:00PM           | 34    | 16.5                                        | 34.9                                            | 5.61                                            |                                             | 28.9                                              | 96.9                                             | 125.8                                        | -                                                |
| 03:00PM           | 35    | 18.1                                        | 40.5                                            | 5.27                                            |                                             | 26.3                                              | 87.1                                             | 113.4                                        | -                                                |
| 04:00PM           | 37    | 17.1                                        | 37.6                                            | 6.81                                            | 0.042                                       | 27.7                                              | 110.8                                            | 138.5                                        | -                                                |
| 05:00PM           | 36    | 19                                          | 38.3                                            | 5.32                                            |                                             | 29.5                                              | 133.4                                            | 162.9                                        | -                                                |

| Parameters        | Temp. | NO<br>( $\mu\text{g}/\text{m}^3$ )          | NO <sub>2</sub><br>( $\mu\text{g}/\text{m}^3$ ) | SO <sub>2</sub><br>( $\mu\text{g}/\text{m}^3$ ) | CO<br>( $\text{mg}/\text{m}^3$ )            | PM <sub>2.5</sub><br>( $\mu\text{g}/\text{m}^3$ ) | PM <sub>10</sub><br>( $\mu\text{g}/\text{m}^3$ ) | SPM<br>( $\mu\text{g}/\text{m}^3$ )          | O <sub>3</sub><br>( $\text{mg}/\text{m}^3$ )     |
|-------------------|-------|---------------------------------------------|-------------------------------------------------|-------------------------------------------------|---------------------------------------------|---------------------------------------------------|--------------------------------------------------|----------------------------------------------|--------------------------------------------------|
| NEQS & BEQS Limit | -     | 24 hrs<br>(40<br>$\mu\text{g}/\text{m}^3$ ) | 24 hrs<br>(80<br>$\mu\text{g}/\text{m}^3$ )     | 24 hrs<br>(120<br>$\mu\text{g}/\text{m}^3$ )    | 08 hrs<br>(40<br>$\mu\text{g}/\text{m}^3$ ) | 24 hrs<br>(5<br>$\text{mg}/\text{m}^3$ )          | 24 hrs<br>(150<br>$\mu\text{g}/\text{m}^3$ )     | 24 hrs<br>(500<br>$\mu\text{g}/\text{m}^3$ ) | 01 hrs<br>(130<br>$\mu\text{g}/\text{m}^3$ )     |
| WHO Limit         | -     | -                                           | 24 hrs<br>(25<br>$\mu\text{g}/\text{m}^3$ )     | 24 hrs<br>(40<br>$\mu\text{g}/\text{m}^3$ )     | 08 hrs<br>(08<br>$\mu\text{g}/\text{m}^3$ ) | 24 hrs<br>(15<br>$\text{mg}/\text{m}^3$ )         | 24 hrs<br>(45<br>$\mu\text{g}/\text{m}^3$ )      | -                                            | Peak<br>season<br>(60 $\mu\text{g}/\text{m}^3$ ) |
| Time              |       | Results                                     |                                                 |                                                 |                                             |                                                   |                                                  |                                              |                                                  |
| 06:00PM           | 35    | 15.2                                        | 33.1                                            | 4.61                                            |                                             | 27.4                                              | 103.2                                            | 130.6                                        | -                                                |
| 07:00PM           | 35    | 13.5                                        | 27.4                                            | 7.61                                            | 0.041                                       | 25.6                                              | 101.1                                            | 126.7                                        | -                                                |
| 08:00PM           | 29    | 12.7                                        | 28.8                                            | 4.28                                            |                                             | 26.1                                              | 86.5                                             | 112.6                                        | -                                                |
| 09:00PM           | 28    | 11.4                                        | 29.3                                            | 6.19                                            |                                             | 28.3                                              | 88.9                                             | 117.2                                        | -                                                |
| 10:00PM           | 27    | 12.5                                        | 40                                              | 4.38                                            | 0.033                                       | 30.1                                              | 89.8                                             | 119.9                                        | -                                                |
| 11:00PM           | 25    | 10.4                                        | 28.6                                            | 5.87                                            |                                             | 28.6                                              | 91.7                                             | 120.3                                        | -                                                |
| 12:00AM           | 26    | 9.6                                         | 25.9                                            | 5.1                                             |                                             | 28.9                                              | 79.9                                             | 108.8                                        | -                                                |
| 01:00AM           | 29    | 10.8                                        | 27.8                                            | 4.91                                            | 0.031                                       | 29.3                                              | 78.8                                             | 108.1                                        | -                                                |
| 02:00AM           | 28    | 9.7                                         | 31.2                                            | 4.26                                            |                                             | 26.7                                              | 55                                               | 81.7                                         | -                                                |
| 03:00AM           | 27    | 8.2                                         | 25.3                                            | 5.31                                            |                                             | 26.9                                              | 82.1                                             | 109                                          | -                                                |
| 04:00AM           | 28    | 7.5                                         | 27.9                                            | 6.91                                            | 0.049                                       | 30.5                                              | 69.7                                             | 100.2                                        | -                                                |
| 05:00AM           | 26    | 8.6                                         | 26.4                                            | 6.19                                            |                                             | 28.7                                              | 67.4                                             | 96.1                                         | -                                                |
| 06:00AM           | 27    | 9.3                                         | 27.5                                            | 6.13                                            |                                             | 29.8                                              | 78.5                                             | 108.3                                        | -                                                |
| 07:00AM           | 28    | 11.5                                        | 30.7                                            | 5.91                                            | 0.036                                       | 24.5                                              | 35.2                                             | 59.7                                         | -                                                |
| 08:00AM           | 29    | 13.2                                        | 25.1                                            | 4.32                                            |                                             | 27.1                                              | 65.9                                             | 93                                           | -                                                |
| 09:00AM           | 29    | 12.1                                        | 28.4                                            | 5.91                                            |                                             | 26.3                                              | 69.5                                             | 95.8                                         | -                                                |
| AVERAGE           | 30.7  | 13.3                                        | 31.6                                            | 5.49                                            | 0.0411                                      | 28.2                                              | 71.8                                             | 100                                          | 6                                                |

Table 4-3: Ambient Air Quality Analysis

| Sr | Measuring Parameters                    | Unit                     | WHO Limit        | NEQS & BEQS Limits | Average Test Result | Remarks |
|----|-----------------------------------------|--------------------------|------------------|--------------------|---------------------|---------|
| 1  | Oxide Of Nitrogen as (NO)               | $\mu\text{g}/\text{m}^3$ | -                | 40 (24 hrs.)       | 12.3                | WL      |
| 2  | Oxide Of Nitrogen as (NO <sub>2</sub> ) | $\mu\text{g}/\text{m}^3$ | 25 (24 hrs.)     | 80 (24 hrs.)       | 31.6                | WL      |
| 3  | Sulphur Dioxide (SO <sub>2</sub> )      | $\mu\text{g}/\text{m}^3$ | 40 (24 hrs.)     | 120 (24 hrs.)      | 5.49                | WL      |
| 4  | Carbon Monoxide (CO)                    | $\text{mg}/\text{m}^3$   | 4 (24 hrs.)      | 5 (08 hrs.)        | 0.0144              | WL      |
| 5  | Particulate Matter (PM 2.5)             | $\mu\text{g}/\text{m}^3$ | 15 (24 hrs.)     | 35 (24 hrs.)       | 27.3                | WL      |
| 6  | Particulate Matter (PM 10)              | $\mu\text{g}/\text{m}^3$ | 45 (24 hrs.)     | 150 (24 hrs.)      | 86                  | WL      |
| 7  | SPM                                     | $\mu\text{g}/\text{m}^3$ | -                | 500 (24 hrs.)      | 114.4               | WL      |
| 8  | Ozone (O <sub>3</sub> )                 | $\mu\text{g}/\text{m}^3$ | 60 (Peak Season) | 130 (01 hr.)       | 6                   | WL      |

## 4.2.6 Water Quality

### a) Surface Water Quality

Table 4-4: Surface water quality at Zainul Abideen Flood Protection Bund

| Sr | Parameters            | Units                       | Testing Method           | NEQS Limits | WHO Limits | BEQS Limits | Result | Remarks |
|----|-----------------------|-----------------------------|--------------------------|-------------|------------|-------------|--------|---------|
| 1  | Total Dissolved Solid | TDS (mg/L)                  | APHA 2540-C              | <1000       | <1000      | <1000       | 362    | WL      |
| 2  | Total Hardness        | As CaCO <sub>3</sub> (mg/L) | APHA 2340-C              | <500        | -          | <500        | 88     | WL      |
| 3  | Fluoride              | F <sup>-</sup> (mg/L)       | APHA 4500-F <sup>-</sup> | ≤1.5        | 1.5        | ≤1.5        | 0.67   | WL      |

| Sr | Parameters     | Units                               | Testing Method                            | NEQS Limits | WHO Limits | BEQS Limits | Result | Remarks |
|----|----------------|-------------------------------------|-------------------------------------------|-------------|------------|-------------|--------|---------|
| 4  | Chloride       | Cl <sup>-</sup> (mg/L)              | APHA 4500-Cl <sup>-</sup>                 | <250        | 250        | <250        | 115    | WL      |
| 5  | Cyanide        | CN <sup>-</sup> (mg/L)              | HACH Method 8027                          | ≤0.05       | 0.07       | ≤0.05       | ND     | WL      |
| 6  | Nitrate        | NO <sub>3</sub> <sup>-</sup> (mg/L) | HACH Method 8192                          | ≤50         | 50         | ≤50         | 0.35   | WL      |
| 7  | Nitrite        | NO <sub>2</sub> <sup>-</sup> (mg/L) | APHA 4500-NO <sub>2</sub> <sup>-</sup> -B | ≤3.0(P)     | 3          | ≤3.0(P)     | 0.05   | WL      |
| 8  | Antimony       | Sb (mg/L)                           | ASTM D-3697                               | ≤0.005      | 0.02       | ≤0.005      | ND     | WL      |
| 9  | Aluminum       | Al(mg/L)                            | ASTM D-857                                | ≤0.2        | 0.2        | ≤0.2        | 0.14   | WL      |
| 10 | Arsenic        | As (mg/L)                           | ASTM D-2972                               | ≤0.05       | 0.01       | ≤0.05       | ND     | WL      |
| 11 | Boron          | B (mg/L)                            | ASTM D-3082                               | 0.3         | 0.3        | 0.3         | ND     | WL      |
| 12 | Barium         | Ba(mg/L)                            | ASTM D-4382                               | 0.7         | 0.7        | 0.7         | 0.006  | WL      |
| 13 | Chromium Total | Cr(mg/L)                            | ASTM D-1687                               | ≤0.05       | 0.05       | ≤0.05       | ND     | WL      |
| 14 | Copper         | Cu (mg/L)                           | ASTM D-1688                               | 2           | 2          | 2           | <0.06  | WL      |
| 15 | Cadmium        | Cd(mg/L)                            | ASTM D-3557                               | 0.01        | 0.003      | 0.01        | ND     | WL      |
| 16 | Lead           | Pb(mg/L)                            | ASTM D-3559                               | ≤0.05       | 0.01       | ≤0.05       | ND     | WL      |
| 17 | Manganese      | Mn(mg/L)                            | ASTM D-858                                | ≤0.5        | 0.5        | ≤0.5        | ND     | WL      |
| 18 | Mercury        | Hg (mg/L)                           | ASTM D-3223                               | ≤0.001      | 0.001      | ≤0.001      | ND     | WL      |
| 19 | Nickel         | Ni(mg/L)                            | ASTM D-3866                               | ≤0.02       | 0.02       | ≤0.05       | ND     | WL      |
| 20 | Selenium       | Se(mg/L)                            | ASTM D-3858                               | 0.01        | 0.01       | 0.01        | ND     | WL      |
| 21 | Zinc           | Zn (mg/L)                           | ASTM D-1691                               | 5           | 3          | 5           | 0.11   | WL      |

\*WL (Within Limits)

## b) Ground Water Quality

Table 4-5: Ground water quality at Zain ul Abideen khan Flood Protection Bund

| Sr | Measuring Parameter      | Units                   | Testing Method            | NEQS Limits  | WHO Limits   | BEQS Limits  | Results |
|----|--------------------------|-------------------------|---------------------------|--------------|--------------|--------------|---------|
| 1  | Temperature AT 40 °C     | °C                      | By Calibrated Thermometer | 40 + ± 03° C | 40 + ± 03° C | 40 + ± 03° C | 31.1    |
| 2  | pH @ 25 °C               | pH                      | ASTM D-1293               | 6 to 9       | 6 to 9       | 6 to 9       | 7.42    |
| 3  | Biological Oxygen Demand | BOD <sub>5</sub> (mg/L) | APHA 5210                 | 80           | 80           | 80           | 68.95   |
| 4  | Chemical Oxygen Demand   | COD (mg/L)              | ASTM D-1252               | 150          | 150          | 150          | 137.9   |
| 5  | Total Dissolved Solids   | TDS (mg/L)              | APHA 2540-C               | 3500         | 3500         | 3500         | 1884    |
| 6  | Total Suspended Solids   | TSS (mg/L)              | APHA 2540-D               | 200          | 200          | 200          | 170.8   |
| 7  | Oil & Grease             | O.G (mg/L)              | ASTM D-4281               | 10           | 10           | 10           | 0.09    |
| 8  | Chloride                 | Cl <sup>-</sup> (mg/L)  | ASTM D-512                | 1000         | 1000         | 1000         | 601     |
| 9  | Phenolic compound        | Phol (mg/L)             | ASTM D-1783               | 0.3          | 0.3          | 0.3          | ND      |
| 10 | Fluoride                 | F <sup>-</sup> (mg/L)   | APHA 4500-F               | 10           | 10           | 10           | 7.1     |
| 11 | Anionic Detergent        | Det (mg/L)              | ASTM D-6173               | 20           | 20           | 20           | 5.26    |
| 12 | Selenium                 | Se (mg/L)               | APHA 4500-Se              | 0.5          | 0.5          | 0.5          | ND      |
| 13 | Sulfide                  | S <sup>2-</sup> (mg/L)  | APHA 4500-S <sup>2-</sup> | 1            | 1            | 1            | 0.74    |
| 14 | Ammonia                  | NH <sub>3</sub> (mg/L)  | ASTM D-1426               | 40           | 40           | 40           | 19.1    |
| 15 | Cadmium                  | Cd <sup>2+</sup> (mg/L) | ASTM-D3557                | 0.1          | 0.1          | 0.1          | <0.52   |

| Sr | Measuring Parameter     | Units                                | Testing Method               | NEQS Limits | WHO Limits | BEQS Limits | Results |
|----|-------------------------|--------------------------------------|------------------------------|-------------|------------|-------------|---------|
| 16 | Chromium Trivalent      | Cr <sup>3+</sup> (mg/L)              | APHA 3500-Cr                 | 1           | 1          | 1           | ND      |
| 17 | Chromium Hexavalent     | Cr <sup>6+</sup> (mg/L)              | APHA 3500-Cr                 | 1           | 1          | 1           | 0.05    |
| 18 | Lead                    | Pb <sup>2+</sup> (mg/L)              | ASTM-D3559                   | 0.5         | 0.5        | 0.5         | 0.84    |
| 19 | Mercury                 | Hg <sup>2+</sup> (mg/L)              | Kit Method                   | 0.01        | 0.01       | 0.01        | ND      |
| 20 | Nickel                  | Ni <sup>2+</sup> (mg/L)              | HACH Dimethylglyoxime Method | 1           | 1          | 1           | ND      |
| 21 | Silver                  | Ag (mg/L)                            | ASTM-D3866                   | 1           | 1          | 1           | ND      |
| 22 | Zinc                    | Zn <sup>2+</sup> (mg/L)              | HACH Zincon Method           | 5           | 5          | 5           | 0.87    |
| 23 | Total Iron              | Fe <sup>2+</sup> (mg/L)              | APHA 3500-Fe                 | 8           | 8          | 8           | 0.11    |
| 24 | Manganese               | Mn <sup>2+</sup> (mg/L)              | APHA 3500-Mn                 | 1.5         | 1.5        | 1.5         | 0.09    |
| 25 | Boron                   | B (mg/L)                             | APHA 4500-B                  | 6           | 6          | 6           | 0.95    |
| 26 | Sulfate                 | SO <sub>4</sub> <sup>2-</sup> (mg/L) | APHA 4500-SO <sub>4</sub>    | 600         | 600        | 600         | 309     |
| 27 | Arsenic                 | As (mg/L)                            | Palmtest Kit                 | 1           | 1          | 1           | ND      |
| 28 | Copper                  | Cu <sup>2+</sup> (mg/L)              | HACH Biquinoline Method      | 1           | 1          | 1           | 0.09    |
| 29 | Chlorine                | Cl <sub>2</sub> (mg/L)               | HACH DPD Method              | 1           | 1          | 1           | ND      |
| 30 | Aluminum                | Al (mg/L)                            | HACH Eriochrome Cyanine R    | 1           | 1          | 1           | ND      |
| 31 | Total Kjeldahl Nitrogen | (mg/L)                               | Kit Method                   | 2           | 2          | 2           | 0.75    |
| 32 | Barium                  | Ba (mg/L)                            | ASTM D-4382                  | 1.5         | 1.5        | 1.5         | 0.79    |

### c) Biological Water Quality

Table 4-6: Biological water quality at Zain ul Abideen khan Flood Protection Bund

| Parameters           | Units                  | Testing Method       | NEQS Limits | WHO Limits  | BEQS Limits | Result  | Remarks |
|----------------------|------------------------|----------------------|-------------|-------------|-------------|---------|---------|
| Total Bacteria Count | TBC (count/ml)         | Total Viable Count   | ---         | ---         | ---         | 5       | -       |
| Total Coliform       | TC (count/ml)          | APHA 922 B           | 0/100 ml    | 0/100 ml    | 0/100 ml    | 285     | OL      |
| E-Coli               | EC(count/ml)           | Total Viable Count   | 0/100 ml    | 0/100 ml    | 0/100 ml    | 79      | OL      |
| Facial Coli          | FC (count/ml)          | APHA 922 B           | 0/100 ml    | 0/100 ml    | 0/100 ml    | 168     | OL      |
| Turbidity            | NTU                    | HACH Turbidity meter | <5          | <15         | <15         | <0.07   | WL      |
| Taste                | Taste                  | Sensory Evolution    | Obj/Non Obj | Obj/Non Obj | Obj/Non Obj | Non-obj | WL      |
| Odour                | Odor                   | Sensory Evolution    | Obj/Non Obj | Obj/Non Obj | Obj/Non Obj | Non-obj | WL      |
| Colour               | TCU                    | Pt-Co method         | ≤15 TCU     | ≤15 TCU     | ≤15 TCU     | <3      | WL      |
| Phenolic Compounds   | As Phenol (mg/L)       | ASTM D-1783          | -           | -           | -           | ND      | WL      |
| Residual chlorine    | Cl <sub>2</sub> (mg/L) | HACH Method 8167     | 0.2-0.5     | -           | 0.2-0.5     | 0.6     | WL      |
| pH @ 25 °C           | PH                     | ASTM D-1293          | 6.5 to 8.5  | 6.5 to 8.5  | 6.5 to 8.5  | 7.89    | WL      |

### d) Noise Record

Table 4-7: Noise Record at Zain ul Abideen khan Flood Protection Bund

| Measuring Parameter | Testing Instrument | Noise Test Report WHO Limit | NEQS & BEQS Limits | TIME    | Results |
|---------------------|--------------------|-----------------------------|--------------------|---------|---------|
| Noise Level         | Noise Meter        |                             |                    | 10:00AM | 62.5    |

| Measuring Parameter | Testing Instrument | Noise Test Report WHO Limit | NEQS & BEQS Limits    | TIME    | Results |
|---------------------|--------------------|-----------------------------|-----------------------|---------|---------|
|                     |                    | 65 dB(A) (Day time)         | 75 dB(A) (Day time)   | 11:00AM | 57.3    |
|                     |                    |                             |                       | 12:00PM | 60.5    |
|                     |                    |                             |                       | 01:00PM | 64.8    |
|                     |                    |                             |                       | 02:00PM | 64      |
|                     |                    |                             |                       | 03:00PM | 65.2    |
|                     |                    |                             |                       | 04:00PM | 61.8    |
|                     |                    |                             |                       | 05:00PM | 63.2    |
|                     |                    |                             |                       | 06:00PM | 62.7    |
|                     |                    |                             |                       | 07:00PM | 59.8    |
|                     |                    |                             |                       | 08:00PM | 63.4    |
|                     |                    |                             |                       | 09:00PM | 62.9    |
|                     |                    |                             |                       | 10:00PM | 56.7    |
|                     |                    | 55 dB(A) (Night time)       | 65 dB(A) (Night time) | 11:00PM | 54      |
|                     |                    |                             |                       | 12:00AM | 54.9    |
|                     |                    |                             |                       | 01:00AM | 56.1    |
|                     |                    |                             |                       | 02:00AM | 52.8    |
|                     |                    |                             |                       | 03:00AM | 50.4    |
|                     |                    |                             |                       | 04:00AM | 53.5    |
|                     |                    |                             |                       | 05:00AM | 51.7    |
|                     |                    |                             |                       | 06:00AM | 53      |
|                     |                    | 65 dB(A) (Day time)         | 75 dB(A) (Day time)   | 07:00AM | 51.9    |
|                     |                    |                             |                       | 08:00AM | 60.9    |
|                     |                    |                             |                       | 09:00AM | 57.8    |
|                     |                    |                             |                       | Average | 57.9    |

### 4.3 ECOLOGICAL ENVIRONMENT

The major vegetation in the area other than agricultural area is classified into forest area, which comprises block plantation, canal and road side plantation and farm forestry. Major species are: eucalyptus, acacia, dalbergia, zizyphis, albizzia, azadricha and sesbania. Alkagae camalerum, kicar (acacia arabica), kandi, tamarix and tali are rare. The growth of meskat is common in the canal area with water logging and salinity. The type of vegetation in the district include agricultural crops, forest area (which is limited to highway forestry), block plantation, canal side and road side plantation and farm forestry. The main species of trees are Eucalyptus, Acacia, Dalbergia, Zizyphis, Albizzia, Azadricha and Sesbania. The shrubs include Presepis Juliflora, Panicum antidetals, Halexylon spp, Alhagae camalorum. The area has agricultural crops which include vegetables and fruits grown on commercial basis.

Wildlife in the area includes migratory and non-migratory species. Migratory birds include ducks and houbaras. In mustard seeds season, wild pigeons are common. Non-migratory birds include brown partridges. Brown partridges used to be common in the area, but their number has decreased, because of excessive shooting, poaching and netting by professional hunters. Netting and poaching of chickens is common. Quails migrate in the beginning of winter. Ducks are commonly found in marsh areas around the canal command area. The game watchers are responsible for the preservation of wild-life. Wild-life includes wolves and jackals, but not as much as there used to be in previous years. Further biological details are provided in the following table

### 4.3.1 Trees and Vegetation Status

The Zain Ul Abideen Flood Protection Scheme is not expected to involve the cutting of any trees. The project footprint has been carefully assessed, and no significant tree cover exists within the immediate construction zone. Vegetation in the area is limited to scattered bushes and shrubs, which are found at a distance from the project site and will remain unaffected and no loss of tree cover is anticipated. By maintaining the existing greenery, the project aligns with good environmental practices and supports compliance with safeguard requirements under the ESMP.

Table 4-8: Ecological Details of the subproject area.

| Category              | Primary Species & Characteristics                                                                                                                                                                |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trees (Flora)         | Kandi ( <i>Prosopis cineraria</i> ), Babul/Kikar ( <i>Acacia nilotica</i> ), Ber ( <i>Ziziphus mauritiana</i> ), Jal/Khabbar ( <i>Salvadora oleoides</i> ), and Siris ( <i>Albizia lebeck</i> ). |
| Shrubs & Ground Cover | Karir ( <i>Capparis decidua</i> ), Akk ( <i>Calotropis procera</i> ), and salt-tolerant Lani ( <i>Suaeda fruticosa</i> ) in saline patches.                                                      |
| Avifauna (Resident)   | Black & Grey Partridges, Common Myna, Indian Roller, Cattle Egrets, House Sparrows, and Black Kites.                                                                                             |
| Avifauna (Migratory)  | Houbara Bustard (winter visitor), Mallards, Common Teals, and various species of herons and sandpipers.                                                                                          |
| Mammals               | Golden Jackal, Desert Fox, Indian Crested Porcupine, Indian Hare, and various field rodents like the Desert Jird.                                                                                |
| Reptiles              | Saw-scaled Viper, Indian Cobra, Common Krait, Spiny-tailed Lizard (Sanda), and various garden geckos.                                                                                            |
| Amphibians & Aquatic  | Balochistan Toad, Skittering Frogs, and freshwater fish such as Rohu and Singhari found in the Pat Feeder Canal system.                                                                          |

### 4.3.2 4.3.2 Floods

Severe monsoon rains in District Sohbatpur frequently trigger flood events due to the district's location within the flood-prone plains of the lower Kachhi region and its exposure to seasonal flood flows, drainage channels, and irrigation infrastructure. Intense rainfall and upstream flood runoff often result in overtopping of drainage channels, embankment erosion, inundation of agricultural lands, disruption of road connectivity, and flooding of nearby settlements. Flood events can cause loss of livelihoods, damage to crops, interruption of irrigation supplies, and deterioration of public infrastructure. Historical flood events, particularly the 2022 monsoon floods, caused widespread inundation across Sohbatpur and surrounding districts, resulting in significant damage to agricultural land, community infrastructure, and residential areas.

The proposed Reconstruction of Flood Protection Bund near Zain ul Abideen Khan Khoso is specifically intended to reduce flood risks in the project area through strengthening and rehabilitation of the existing flood protection infrastructure. The project will improve protection of nearby settlements, agricultural lands, and community assets from recurrent flood damage and erosion.

### 4.3.3 Protected and Historical Area

There are no wildlife protected areas, archaeological sites, or protected historical buildings located within the proposed project area of the Zain ul Abideen Khan Khoso Flood Protection Bund.

## 4.4 SOCIO-ECONOMIC STUDY

As part of the Environmental and Social Management Plan (ESMP), a socio-economic study was carried out to understand the realities of life in the areas influenced by the Zain Ul Abideen Khan

Flood Protection Bund (FPB). This assessment was not just about numbers—it was about listening to communities, observing their livelihoods, and recognizing both opportunities and challenges. The study looked at who lives in the project area, how families earn their income, the extent of cultivated and uncultivated land, and the availability of basic services such as water, health, and education. It also examined the condition of local infrastructure and how communities depend on natural resources, especially land and water, for their survival. Importantly, the assessment distinguished between vulnerable and non-vulnerable groups, ensuring that the voices of women, landless households, and marginalized communities were not overlooked.

By establishing this baseline, the project team now has a clear picture of existing socio-economic conditions. This serves as a benchmark for measuring both the positive and negative impacts that may arise during construction and operation. For example, while the project will protect 26,000 acres of cultivated land and open up 15,008 acres of currently uncultivated land for future use, it may also temporarily disrupt livelihoods during construction. Recognizing these dynamics allows for proactive planning.

In line with the World Bank's ESS framework, the findings guide the design of mitigation measures and enhancement strategies. ESS1 emphasizes managing risks and impacts responsibly, ESS4 ensures community health and safety are prioritized, and ESS10 highlights the importance of engaging stakeholders in a transparent and inclusive way. Together, these safeguards ensure that the project is not only technically sound but also socially fair and environmentally responsible.

#### **4.4.1 Data Source and Methodology of Baseline Survey**

The socio-economic baseline survey for the Zain ul abideen was conducted to:

- Assess prevailing demographic, livelihood, and infrastructure conditions in the project area.
- Estimate household income sources, asset ownership, poverty incidence, and vulnerabilities.
- Evaluate access to basic services such as education, health, water, sanitation, communication, and energy.
- Provide a benchmark for measuring future socio-economic impacts of flood protection interventions.

Under this survey, 55 households were interviewed out of a total of 140 households (total population: 1120) representing approximately 39.28% of households in the Zain Ul Abideen khan FPB. Interviews were conducted with 30 male and 20 female household members, separately, to ensure gender disaggregated data collection and inclusive representation of community perspectives. Furthermore, above referenced data includes the data of children and disables of the project area so this stands 3 children and 2 disable were interviewed.

#### **4.4.2 Evaluation Approach & Sampling Strategy**

We used a before-and-after comparison to track project changes. Data came from household surveys, interviews, and field visits, backed by local secondary sources. Sampling was done in two steps: first, Union Councils in the surrounding villages of Zain Ul Abideen khan FPB area were chosen to reflect the wider community. Then, 55 households were proportionally selected across poor, middle, and better-off groups, ensuring fair representation and reliable results.

#### **4.4.3 Survey Instruments and Data Collection Tools**

In line with the World Bank Environmental and Social Framework requirements, various survey instruments were applied to collect primary social baseline these instruments included structured Interview guides were used to conduct key informant interviews, including observation-based interviews with individuals and elders from the local community, to collect local knowledge,

perceptions, and site-specific concerns. Additionally project- approved screening checklists were also used during site visit to collect site specific information.

Table 4-9: Short Profile of District Sohbatpur

| Indicator                                  | Details                                                                      |
|--------------------------------------------|------------------------------------------------------------------------------|
| Total Population                           | 240,106 (2023 Census)                                                        |
| Total Households                           | 33,734                                                                       |
| Urban vs Rural                             | Urban: 6.1% (14,728)   Rural: 93.9% (225,378)                                |
| Gender Ratio                               | 103.06 males per 100 females                                                 |
| Age Structure                              | 43% of the population is under 10 years of age                               |
| Primary Languages                          | Balochi (67.4%), Sindhi (17.6%), Brahui (7.9%)                               |
| Major Religions                            | Islam (99%), Hinduism (0.75%)                                                |
| <b>Education &amp; Literacy</b>            |                                                                              |
| Category                                   | Percentage / Rank                                                            |
| Overall Literacy Rate                      | 41.02%                                                                       |
| Male Literacy                              | 53.26%                                                                       |
| Female Literacy                            | 28.42%                                                                       |
| Out-of-School Children                     | Approximately 39% (highest at primary level)                                 |
| Education Performance                      | Ranked "Low" on the National District Education Performance Index            |
| <b>Economic &amp; Agricultural Profile</b> |                                                                              |
| Main Stay                                  | Agriculture and Livestock                                                    |
| Major Crops (Rabi)                         | Wheat, Chickpea, Rapeseed                                                    |
| Major Crops (Kharif)                       | Rice (primary cash crop), Sugarcane, Cotton                                  |
| Cultivated Area                            | Approximately 223,102 hectares (highly reliant on irrigation)                |
| Livestock                                  | Dominant sector for rural livelihoods; sheep and goats are primary assets    |
| Poverty Level                              | Estimated 70%+ (Multidimensional Poverty), consistent with provincial trends |
| <b>Infrastructure &amp; Health</b>         |                                                                              |
| Hospitals                                  | 01 District Headquarters (DHQ) Hospital                                      |
| Primary Health Units                       | 17 Basic Health Units (BHUs) & 01 Rural Health Center (RHC)                  |
| Maternal Health                            | 21 Birth Stations & 04 MCH Centers                                           |
| Housing Structure                          | 92% Katcha (non-permanent) houses                                            |
| Fuel Source                                | 89% of households use wood for cooking                                       |

#### 4.4.4 Sensitive Receptors

The subproject area is surrounded by several nearby settlements, including Hairdin, Hazar Khan, Gul Muhammad Killi, Yaseen Khosa Got, and Gul Gavor, located at distances ranging from a minimum of 0.5 km to a maximum of 3 km. Due to the proximity of some villages, particularly Hazar Khan at 0.5 km, these communities may experience direct & direct impacts such as dust, noise, and construction-related disturbances, while villages at relatively farther distances may face indirect impacts. Therefore, appropriate mitigation measures mentioned shall be implemented to minimize potential effects on the local population. (Socio Economic Baseline Survey)

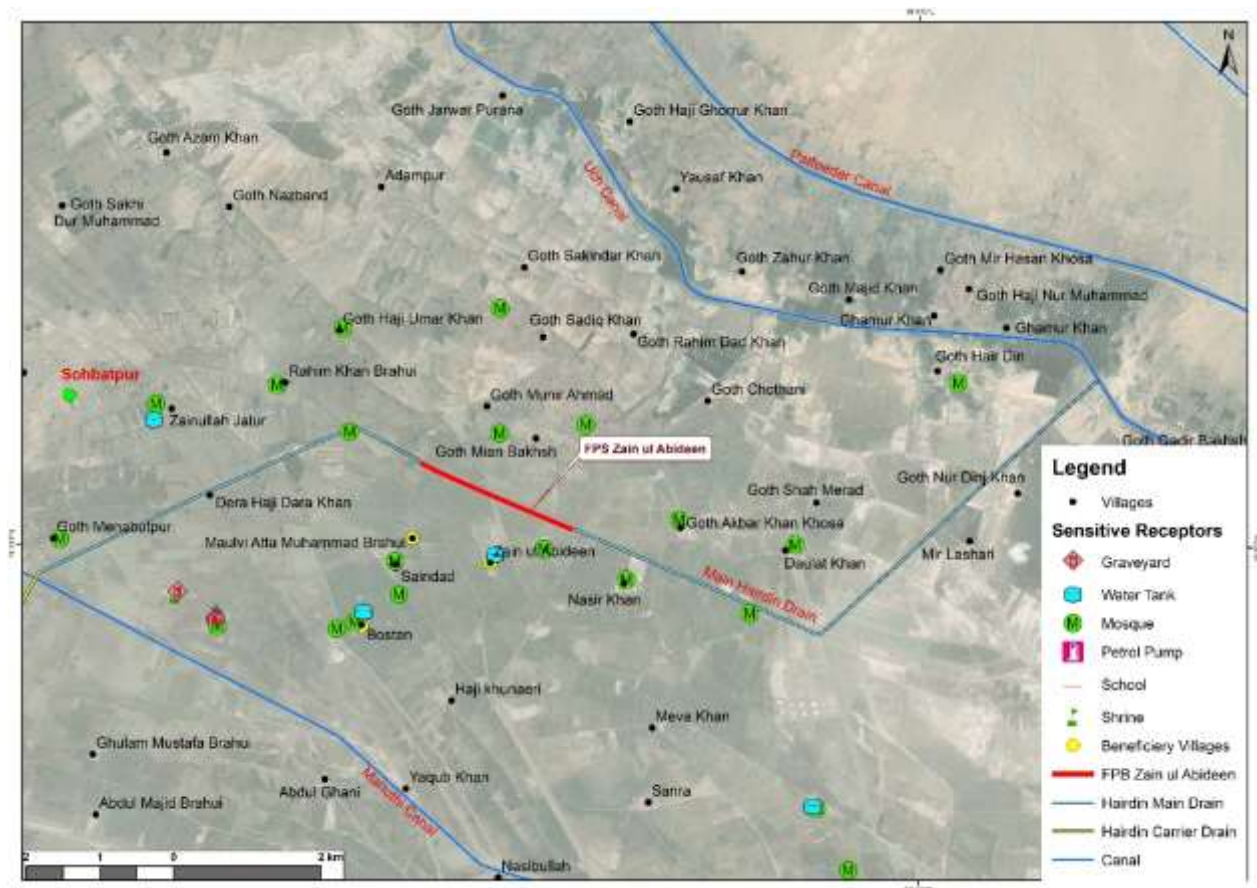


Figure 4-4: Map of Sensitive Receptors

Table 4-10 Distance of Sensitive Receptors

| Village Name       | Distance from the Subproject Area |
|--------------------|-----------------------------------|
| Hairdin            | 1 km                              |
| Hazar Khan         | 0.5 km                            |
| Gul Muhammad killi | 3 km                              |
| Yaseen Khosa got   | 1 km                              |
| Gul Gavor          | 1 km                              |

#### 4.4.5 Key Social Indicators

This section provides an overview of the key social indicators within the proposed project area of the Zain-ul-Abideen Schemes. It highlights demographic composition, education, health, livelihoods, housing, and access to essential services, offering a snapshot of prevailing community conditions. The baseline assessment serves as a foundation for understanding existing challenges and opportunities, and for evaluating potential social impacts. It also guides the design of interventions aimed at promoting equitable development, resilience, and improved living standards for the affected communities.

##### 4.4.5.1 Household Survey

- Total households in the Zain Ul Abideen Khan area: 140
- Total population: 1,120.
- Households surveyed: 55
- Individuals interviewed: 55 (30 men, 20 women and 5 from vulnerable)
- Sample represents: 39.28% of male and female household members

| Village Name                   | Number of Households in Village | Total Population | Distance from the subproject Area |
|--------------------------------|---------------------------------|------------------|-----------------------------------|
| <b>Downstream</b>              |                                 |                  |                                   |
| Dur Abad                       | 50                              | 370              | 0.5 km                            |
| Zain ul Abideen                | 70                              | 500              | 0.5 km                            |
| Got Muhammad Mukheri           | 20                              | 250              | 1 km                              |
| Total Household and Population | 140                             | 1120             |                                   |

#### 4.4.5.2 Education Facilities

In the sub-project area of Zain-ul-Abideen, educational facilities are very limited. There is only one primary school in the area, which serves boys only and provides education up to the primary level. No middle, secondary, or higher education institutions are available within the sub-project villages. As a result, students must travel to Sohbatpur City to continue their education beyond the primary level, which creates access and affordability challenges for many families.

Student attendance at the primary school is low, recorded at only 31.2 percent, while staff attendance stands at 60 percent. These figures reflect limited community access, weak infrastructure, teacher absentees and challenges in retaining both students and teaching staff in the area.

#### 4.4.5.3 Health Facilities

The sub-project area has one functional dispensary providing basic health services to the surrounding villages. However, the dispensary is equipped to provide only minor treatments. Infrastructure and service quality are inadequate, limiting its ability to meet local healthcare needs. For emergencies, specialized treatment, or advanced medical services, residents must travel to the District Headquarters Hospital in Sohbatpur or, in serious cases, to Karachi.

#### 4.4.5.4 Water Supply and Sanitation

Water supply facilities in the area are extremely limited. Only one water supply scheme is available, which is insufficient to meet the drinking and domestic needs of the local population. As a result, most households depend on groundwater drawn from nearby private wells. Water is often transported over long distances using donkeys or other livestock, making access time-consuming and physically demanding. Limited sanitation facilities and unsafe water sources further increase health risks for the community, particularly for women and children.

#### 4.4.5.5 Communication and Electricity

Landline telephone service is not available, but mobile network coverage is weak. All households are connected to the national electricity grid (K-Electric), but severe load shedding limits availability to approximately 8 hours per day. No natural gas supply is available; residents depend on LPG, gasoline, bushes, and firewood for cooking and heating.

#### 4.4.5.6 Transport

The area is located 10 km from Sohbatpur and 319 km from Quetta City. Common transport modes include minibuses, rickshaws, pickups, and motorbikes. Link roads in the four villages are Semi pakha tracks, poorly maintained, and require urgent rehabilitation.

#### 4.4.5.7 Social Conflicts

No tribal conflicts were reported in the sub-project area. Conflict resolution traditionally occurs through tribal or community led mechanisms, which residents often consider more effective than formal government channels. Community members confirmed that no conflict in past or present are associated with the project area.

#### 4.4.5.8 Household Information

The socio-economic baseline survey indicates that the proposed sub-project is expected to generate positive impacts for the entire population within the Zain UI Abideen Khan command area, covering three villages with a total population of 1,120. The details are presented in the table below:

Table 4-11: Number of households and total population

| Name of Villages                 | Number of Households<br>in Village | Total Population |
|----------------------------------|------------------------------------|------------------|
| Zain UI Abideen Khan 03 Villages | 140                                | 1,120            |
| Total Household and Population   | 140                                | 1,120            |

#### 4.4.5.9 Respondent's Relationship with Head of Household

During the survey, 50% of the respondents were heads of households who participated directly in the interviews. Additionally, 20% of respondents were brothers, 15% were sons, and 05% were wives of the household heads. Female-headed households accounted for 10% of the total respondents.

#### 4.4.5.10 Family Size

The survey data indicates that household sizes vary significantly in the sub-project area. Approximately 15% of households have 1–5 members, 30.2% have 5–10 members, 25.7% have 10–15 members, and 40% of households consist of 15 or more members.

#### 4.4.5.11 Family System

Approximately 60.3% of the community prefers living in a joint family system, while 40% opt for a nuclear family arrangement. In joint families, the eldest male typically assumes responsibility for all members and acts as the primary decision-maker, especially regarding public and community matters. This family structure also provides a strong social safety net during periods of unemployment or financial hardship, supporting vulnerable groups such as poor women, the elderly, the infirm, and orphans. Communities consider the joint family system more economical, as members often work together on the same land and pool their incomes to sustain the entire household, including those unable to work.

#### 4.4.5.12 Marriage

Data from the table below indicates that residents of the sub-project area largely prefer marriages within their families, with 80% of marriages occurring among relatives. However, 20% of marriages now take place outside the immediate family but typically remain within the same tribe, reflecting a gradually increasing trend toward out-of-family.

#### 4.4.5.13 Health Problems

Communities in Sohbatpur face multiple and recurring health challenges. Malaria and dengue are among the most common diseases, with Sohbatpur remaining a highly endemic area, particularly after the 2022 floods, which led to a sharp increase in cases among children aged 5–15 years. Waterborne diseases such as acute diarrhea, cholera, and typhoid are widespread due to unsafe drinking water and poor sanitation conditions. Respiratory illnesses, including acute lower respiratory infections and influenza-like illnesses, are also common, largely linked to air pollution from the open burning of garbage and plastic. In addition, skin and eye infections such as scabies and conjunctivitis are frequently reported in rural areas where hygiene practices and access to clean water are limited.

Maternal and child health conditions remain critical. High levels of child malnutrition persist, with more than half of screened children suffering from moderate to severe acute malnutrition. Low immunization coverage has resulted in repeated outbreaks of vaccine-preventable diseases, including measles and diphtheria. Many women continue to give birth at home without skilled medical assistance, increasing the risk of complications such as hemorrhage, infections, and pregnancy-related deaths.

#### 4.4.5.14 Common Needs to Visit Nearest City

Family members travel to the nearest city for a variety of purposes. Approximately 20% visit to meet relatives, 45% for business-related activities, 30% for educational needs, and 5.7% for health services.

#### 4.4.5.15 Livestock

The average number and type of livestock owned in Zain Ul Abideen Khan Villages are given in the following table:

Table 4-12: Average No & Type of Livestock Ownership

| Livestock Ownership | Zain Ul Abideen Khan Village Avg/HH |
|---------------------|-------------------------------------|
| No. of Buffalos     | 06                                  |
| No. of cows         | 2                                   |
| No. of Goats        | 08                                  |
| No. of Sheep        | 06                                  |
| No. of Oxen         | 05                                  |
| No. of chicken      | 08                                  |
| No. of donkey       | 02                                  |

#### 4.4.5.16 Source of Fodder

Farmers meet their livestock grazing needs from the nearest rangeland. In addition, fodder is also cultivated on agricultural land. Straw is also used as a fodder. Farmers do not purchase fodder from the market.

#### 4.4.5.17 Source of Livelihood and Income

Livelihoods in Sohbatpur are overwhelmingly anchored in subsistence and commercial agriculture, with nearly 80% of the population directly or indirectly employed in the cultivation of rice and wheat via the Pat Feeder Canal system. Livestock rearing serves as a vital secondary income stream and an "economic buffer" for rural households, who rely on cattle, goats, and sheep for dairy and meat sales. Beyond the fields, income is supplemented by small-scale trade in local bazaars, daily wage labor in the construction sector, and a small segment of government employment in the education and health departments. However, because the district lacks a formal industrial base, the local economy remains highly vulnerable to climate-induced shocks, such as the floods that frequently wipe out crop yields and livestock assets.

The baseline survey shows that agriculture is the primary source of income for households in Zain Ul Abideen Khan villages, with monthly earnings ranging from PKR 20,000 to PKR 25,000. All households also rely on secondary income sources such as livestock, transportation, small businesses, and salaried employment, generating an additional PKR 17,000 to PKR 20,000 per month.

**4.4.5.18 Agriculture Tools and Farm Machinery**

Agriculture in the sub-project area largely depends on rainfall and seasonal floods, which provide water primarily for late Kharif and Rabi (spring) crops. Due to poverty and local cropping patterns, most farmers lack ownership of key agricultural equipment such as oxen ploughs, tractor ploughs, tractors, trolleys, and threshers. Only 40% of farmers own a spray machine. Other essential farm machinery, including tractors for ploughing and threshers, is typically rented as needed.

**4.4.5.19 Commonly Used Agriculture Inputs**

The average agricultural expenditure per acre including costs for seed, fertilizers, pesticides, ploughing, and harvesting is approximately PKR 25,000 (USD 88.69) per crop.

Table 4-13: Estimated Expenses per Year per Acre

| Items                    | Expenses/Acre | Expenses/Acre in USD |
|--------------------------|---------------|----------------------|
| Ploughing                | 5,000         | 17.74                |
| Cotton seeds /bag (10kg) | 9,000         | 31.93                |
| Urea DAP                 | 1,750         | 7                    |
| DAP                      | 4,050         | 17                   |
| Pesticides/Lit           | 2,000         | 7.10                 |
| Total cost               | 25,000 PKR    | USD 88.69            |

**4.4.5.20 Seasonal Earnings from Crops**

During the baseline survey, the following average seasonal earnings in rupees per acre were reported in the sub-project area.

Table 4-14: Average Seasonal Earnings/acre

| Seasons                | Average Seasonal Earning/Acre (in PKR) | Avg Earning/ Acre in USD |
|------------------------|----------------------------------------|--------------------------|
| Rabi (autumnal)        | 26,000                                 | 92.24                    |
| Rabi and Kharif (Both) | 26,000                                 | 92.24                    |

**4.4.5.21 Agricultural landholding and cropping pattern**

Tenancy is relatively uncommon in the sub-project area, with 75% of agricultural land cultivated by owners and 25% operated by tenants. The land is generally fertile, supporting diverse crops. During the Kharif season (spring-summer), farmers primarily grow sugarcane, cotton, sorghum, and vegetables. In the Rabi season (autumn-winter, April to October), the main crops include wheat, pulses, and lentils.

**4.4.5.22 Anticipated Losses due to the Project**

The proposed sub-project is not expected to cause any loss of trees, cultivated land, or residences, as all activities will be carried out within the existing canal area. Agriculture remains the primary source of income for households in the area, and the community is expected to benefit directly from the improvements and construction works on the Zain ul Abideen area.

**4.4.5.23 Pit Latrines and Toilets**

In the Zain Ul Abideen Khan area, approximately 75% of households have toilets; however, these are not connected to a proper sanitation system, and open defecation is still practiced in the community.

**4.4.5.24 Type of Housing**

In the sub-project area, 50% of houses are pucca (constructed with brick and concrete), 20% are semi-pucca, and 25% are kachha (mud-built) houses.

**4.4.5.25 Residential Plot Size**

The baseline survey indicates that in the sub-project area, 75% of households have plot sizes ranging from 2,500 to 3,500 sq. ft., 20% of households have plots between 3,600 and 5,000 sq. ft., and 05% of households own plots larger than 5,000 sq. ft.

**4.4.5.26 Land Ownership**

Land in the Zain Ul Abideen Khan command area is predominantly owned by shareholders based on lineage, with official records maintained by the Revenue Department. The baseline survey revealed that land sales are uncommon in the area. However, when land is sold, the transfer of ownership is conducted formally and documented with the Revenue Department.

**4.4.5.27 Customary Institutions**

The tribal system is prevalent in the sub-project area, with the primary tribes being Abro, Salangi, Jamali, and Manjo.

**4.4.5.28 Local Government and Administration**

In the sub-project area, the elected members of the provincial and national assemblies are now actively engaged in overseeing and supporting development activities within their constituencies. Previously, local government representatives including Chairmen, Vice-Chairmen, and their Councilors operated under the Balochistan Local Government Act 2013 and were responsible for implementing development projects at the village, union council, and district levels. At the village and union council level, the Union Council Chairmen and Councilors managed local development initiatives, while at the district level, development works were overseen by the District Council led by the Chairman. Although this formal local government system is no longer in effect, former councilors and chairmen continue to participate in development efforts as political workers, collaborating with provincial and national assembly members to improve infrastructure and services in their areas. The district-level bureaucracy also plays an important role in this process, including the Commissioner, Deputy Commissioner, Additional Deputy Commissioner, Assistant Commissioners, line department officers, and revenue officials, ensuring coordination and support for development activities.

**4.4.5.29 Law and Order Situation**

The law and order situation in the Hairdin Main Drain sub-project area is maintained by the District Administration, Police Department, and Balochistan Levies Force. These agencies are responsible for maintaining public safety and security in both urban and rural areas of District Sohbat Pur. Based on consultations with local communities and relevant authorities, the overall security situation in the project area is generally stable and conducive to project implementation. Coordination with local law enforcement agencies will be maintained throughout the construction period to ensure the safety of workers, equipment, and project assets.

**4.4.5.30 Community Cultural Properties**

The following community cultural properties are found in Zain ul Abideen. These cultural properties do not fall in the channel alignment area or RoW of any of the channel area. The details are illustrated in the following table:

Table 4-15: Community Cultural Properties

| Village              | Grave Yard | Mosque | In RoW |
|----------------------|------------|--------|--------|
| Zain Ul Abideen Khan | 3          | 03     | No     |

#### **4.4.5.31 Community Awareness about Sub-Project Works**

Communities in the Zain Ul Abideen Khan area are well-informed about the proposed sub-project activities and the planned implementation schedule. This awareness has been fostered through multiple rounds of public consultations conducted by project staff, including sessions for the Local Grievance Redressal Committee, and the formation of farmers' organizations and women's development groups. Additionally, separate consultation meetings for men and women were held in Zain Ul Abideen Khan Village in August, 2025 to ensure inclusive community engagement and participation in the project.

#### **4.4.5.32 Positive Impacts of Zain-UI-Abideen Scheme**

The Zain-UI-Abideen Flood Protection Scheme is expected to provide direct protection to approximately 1,766 acres of agricultural land, safeguarding cultivated areas from recurrent flood damage, erosion, sediment deposition, and inundation impacts. Protection of these agricultural lands will contribute significantly toward maintaining crop productivity, reducing losses during flood events, and supporting the livelihoods of local farming communities dependent on agriculture as their primary source of income.

The implementation of flood protection measures under the scheme will enhance the resilience of the command area against future flood events by improving hydraulic performance, reducing overbank flow risks, and stabilizing vulnerable reaches. The improved level of protection is expected to encourage better land utilization practices and support sustained agricultural activities within the protected area.

In addition to agricultural benefits, the project will generate temporary employment opportunities during construction through engagement of local labor for earthworks, embankment construction, stone pitching, protection works, transportation, and associated activities. These short-term economic benefits will provide income opportunities for surrounding communities and contribute to local economic activity.

In the long term, the scheme is expected to reduce recurring flood-related damages to agricultural land and infrastructure, improve climate resilience, strengthen livelihood security, and support sustainable rural development objectives within the project area.

5

## STAKEHOLDER CONSULTATIONS

## 5 STAKEHOLDER CONSULTATIONS

This section presents the process, outcomes, and key findings of stakeholder consultations carried out for the proposed Subproject in accordance with applicable national requirements, the World Bank Environmental and Social Framework (ESF), particularly ESS10 (Stakeholder Engagement and Information Disclosure), and the Project's preliminary Stakeholder Engagement Plan (SEP). The consultations were undertaken during the preparation of the ESMP to inform impact identification, refine mitigation measures, and enhance project acceptability among affected communities and institutions.

### 5.1 OBJECTIVES OF STAKEHOLDER CONSULTATION

The objective of public consultation is to ensure that the sub-project proponent should share relevant information about the project interventions and the potential environmental and social impacts with all stakeholders. Consultation is a two-way process by which the knowledge and views of affected persons and other interested parties are considered for purposes of decision making. Information dissemination during public consultation by the project proponent or his representative is fundamental to meaningful consultation.

Similarly, efforts are also made to mainstreaming women in all planned project activities as the GAP has also proposed the design and implementation of specialized projects and its interventions strategically to promote active engagement of men and women with the Project.

The stakeholder consultation process was undertaken with the following objectives:

- To disclose relevant information regarding the Subproject scope, activities, and anticipated environmental and social impacts to affected and interested stakeholders in a transparent and timely manner.
- To provide an opportunity for stakeholders, including those who may otherwise be underrepresented, to express their views, concerns, and priorities, thereby enabling informed consideration of mitigation measures and trade-offs.
- To support the identification of potential adverse impacts that may not have been captured through desk-based assessments alone, including local and traditional knowledge.
- To enable stakeholders to positively influence Subproject design and implementation arrangements, within the approved scope of the project.
- To strengthen transparency, accountability, and public confidence in project decision-making.
- To reduce the risk of conflict through early identification of concerns and incorporation of appropriate mitigation and communication measures.
- To foster a sense of ownership of the Subproject among local communities.

### 5.2 STAKEHOLDER IDENTIFICATION

Stakeholder identification was carried out during the ESMP scoping phase to ensure that all relevant stakeholder groups were appropriately consulted. The primary focus was on communities residing in and around the Subproject area, noting that there is no permanent population within a 500 m right-of-way (RoW) on either side of the proposed works.

Stakeholders were categorized as follows:

#### 5.2.1 Non-institutional stakeholders

Relevant government departments and local administration, including district and tehsil-level officials.

### 5.2.2 Institutional stakeholders

Residents of nearby settlements, farmers, shopkeepers, local business owners, representatives of schools and basic health facilities, and women and vulnerable groups residing in the surrounding areas.

Targeted consultations with women were conducted in line with the Gender Inclusion Framework, ESS1, ESS2, ESS10, and the SEP. Separate, culturally appropriate meetings were facilitated by female staff in the Zain ul Abideen areas. A total of sixteen (16) women participated. Key concerns raised included household and child safety, access routes, water and sanitation, community infrastructure, construction-related disturbances, livelihood considerations, and timely information sharing. These concerns have been incorporated into the ESMP through gender-responsive mitigation measures, community health and safety provisions, traffic and construction safety controls, and monitoring indicators.

### 5.3 CONSULTATION PROCESS

Stakeholder consultations were carried out during the preparation of the ESMP for the Zain ul Abideen Khan Khoso Flood Protection Bund through a combination of public meetings, Key Informant Interviews (KIIs), and Focus Group Discussions (FGDs). Consultations were conducted in local languages and documented to ensure that the views, concerns, and recommendations of affected communities and stakeholders were properly recorded and incorporated into project planning and environmental management measures.

The consultation process was undertaken in accordance with national environmental consultation requirements, the World Bank Environmental and Social Framework (ESF), and the Project Stakeholder Engagement Plan (SEP). As the ESMP is a living document, stakeholder consultations shall continue throughout project implementation to ensure effective community participation, timely resolution of grievances, and incorporation of stakeholder feedback into project activities.

Particular emphasis was placed on consulting communities residing near the proposed flood protection bund alignment, including farmers, landowners, community elders, local representatives, and other potentially affected stakeholders regarding flood risks, construction activities, access requirements, environmental concerns, occupational health and safety issues, and expected project benefits.

Details of non-institutional consultations conducted within the subproject area are summarized in Table 5.1. A pictorial record of consultation meetings held with community elders, local residents, and other stakeholders regarding the Zain ul Abideen Khan Khoso Flood Protection Bund is provided in **Annexure-X**.

Details of non-institutional consultations conducted along the subproject area are summarized in Table 5.1.

Table 5-1 Details of Non-Institutional Consultations

| Location                                              | No. of Respondents | Date       |
|-------------------------------------------------------|--------------------|------------|
| Zain-ul-Abidin Dur Abad Village                       | 10                 | 03/10/2025 |
| Goth Muhammad, Rasool Abad                            | 13                 | 03/10/2025 |
| Women Consultation at Zain-ul-Abidin Dur Abad Village | 7                  | 03/10/2025 |
| Women Consultation at Goth Muhammad, Rasool Abad      | 9                  | 03/10/2025 |

#### 5.4 KEY ISSUES RAISED BY NON-INSTITUTIONAL STAKEHOLDERS

During consultations in Zain ul Abideen Khan Khoso Protection areas, community members raised the following key concerns:

- Limited access to safe and reliable drinking water;
- Inadequate sanitation and sewerage facilities;
- Poor and flood-damaged access roads;
- Limited availability of nearby health facilities;
- Flood-related damage to agricultural land requiring restoration;
- Safety of children and women during construction;
- Respect for local customs, traditions, and community norms.

These issues were carefully reviewed during ESMP preparation. While some concerns (e.g., provision of social infrastructure such as schools, hospitals, electricity, and gas) fall outside the scope of the Subproject, construction-related risks and temporary impacts have been addressed through targeted mitigation measures, including traffic and construction safety management, community health and safety provisions, labor management measures, access management, and grievance redress mechanisms.

#### 5.5 INSTITUTIONAL CONSULTATIONS

Stakeholder engagement is a fundamental component of effective project planning and implementation. It ensures transparency, inclusiveness, and informed decision-making while fostering trust and collaboration among all relevant stakeholders. In line with the World Bank's Environmental and Social Standard (ESS10), such engagement enhances environmental and social outcomes and strengthens institutional coordination throughout the project lifecycle.

An institutional consultation meeting was conducted by the Social and Technical Teams of the project with key government stakeholders to discuss the proposed Zain ul Abideen Khan Khosa Flood Protection Scheme under the Integrated Flood Resilience and Adaptation Project (IFRAP). The meeting was held at the office of the Sub-Divisional Officer (SDO), Irrigation Department, and was attended by key district representatives, including Deputy Commissioner (DC) Fareeda Tareen, Assistant Commissioner (AC) Saif ul din Khosa, SDO Bandar Nazeer Ahmed Khosa, Agriculture Officer Tariq Hanees, and XEN Irrigation Khurshid Alam.

During the consultation, the project team presented the project scope, proposed interventions, implementation schedule, and environmental and social safeguard requirements under IFRAP. Particular emphasis was placed on the Voluntary Land Donation (VLD) process, with clear communication that the subproject would not involve any permanent land acquisition. This clarification helped build confidence among stakeholders regarding the project's socially responsible approach.

Detailed discussions were held on existing flood risks, historical flood impacts, and the need for effective flood protection measures to safeguard agricultural land, settlements, and infrastructure in the project area. The SDO Irrigation provided valuable technical insights on local hydrology, past flood behavior, and existing irrigation and flood management infrastructure. Administrative perspectives emphasized the importance of strong coordination with local authorities and continued community engagement during implementation.

Discussions also touched upon law-and-order conditions in the project area. While no immediate concerns were raised, participants emphasized the importance of maintaining close coordination during implementation to manage any potential risks in the future.

All participating officials expressed their full support and commitment to facilitating the successful implementation of the subproject. The consultation concluded with a shared understanding of the importance of sustained institutional collaboration, proactive information sharing, and coordinated efforts to ensure the effective delivery of the Zain ul Abideen Khan Khosa Flood Protection Scheme and its long-term benefits for local communities.

## **5.6 FUTURE CONSULTATIONS AND DISCLOSURE**

Stakeholder engagement will continue throughout Subproject implementation. The draft ESMP will be disclosed to stakeholders prior to finalization to confirm that key concerns and mitigation measures have been adequately incorporated. The final ESMP will be made available at the PMU/PIU offices and shared upon request.

Regular consultations will be conducted before and during construction to keep communities informed of construction schedules, potential disruptions, and safety measures. As part of the Grievance Redress Mechanism (GRM), community meetings will be held periodically to receive feedback and address concerns in a timely and transparent manner. The GRM will provide accessible, time-bound, and culturally appropriate channels for stakeholders to raise environmental and social concerns related to Subproject implementation.

6

## IMPACT ASSESSMENT & MITIGATION MEASURES

## 6 IMPACT ASSESSMENT AND MITIGATION MEASURES

### 6.1 GENERAL

The implementation and consequent operation of the Subproject is expected to impact the biophysical and social environment. These impacts will be minor, local, temporary, short-term and reversible as well positive impacts, since the scope is the rehabilitation of existing flood protection bund and embankments.

This section discusses the potential E&S impacts of the proposed Subproject activities, predicts the magnitude of the impact, assesses their significance, identifies mitigation measures to minimize the adverse impacts, and evaluates the residual impacts, if any, of the Subproject.

### 6.2 ASSESSMENT METHODOLOGY

The potential E&S impact of a development activity is identified on the basis of concerns raised by stakeholder, particularly the local community, technical guidelines, and professional opinion of the project team. The existing E&S conditions of the Subproject are categorized in the context of impact analysis by following a set of steps. The steps followed for impact assessment are described in Table 6-1.

Table 6-1: Stepwise Methodology for Impact Assessment

|               |                                                     |                                                                                                                                                                                                                                                                                                                           |
|---------------|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Step 1</b> | <b>Criteria for Determining Significance</b>        | The consequence of the proposed activity is evaluated by comparing it against recognized 'significance criteria'. The criteria are of the following types:                                                                                                                                                                |
|               |                                                     | Institutional: legislative requirements laid down by the environment for environmental protection including laws, standards, policies.                                                                                                                                                                                    |
|               |                                                     | Technical: guidelines, available technical or scientific knowledge, or judgment of experts.                                                                                                                                                                                                                               |
|               |                                                     | Public: social or cultural values in addition to views of a segment of society, especially the community directly affected by the Project.                                                                                                                                                                                |
| <b>Step 2</b> | <b>Determine the magnitude of potential impacts</b> | Assessing the scale and describing the anticipated impacts either quantitatively (where possible) or qualitatively or both.                                                                                                                                                                                               |
| <b>Step 3</b> | <b>Identify of mitigation measures</b>              | If the predicted impact is of significant nature when compared to the criteria for determining significance, suitable mitigation measures are identified. A range of mitigation measures can be applied to reduce the anticipated impact of a project, and these can be broadly classified into the following categories: |
|               |                                                     | Avoid the impact altogether by not taking a certain proposed activity or parts of an activity.                                                                                                                                                                                                                            |
|               |                                                     | Minimizing impacts by limiting the degree or magnitude of the activity.                                                                                                                                                                                                                                                   |
|               |                                                     | Rectifying the impact by repairing, rehabilitating, or restoring the affected environment and community.                                                                                                                                                                                                                  |
| <b>Step 4</b> | <b>Evaluating residual impact</b>                   | Compensating for the impact by replacing or providing substitute resources or environments.                                                                                                                                                                                                                               |
|               |                                                     | As the mitigation measures are implemented, the anticipated adverse impacts enter the acceptable limits. This step identifies the remaining impact after incorporation of mitigation measures, if any.                                                                                                                    |
| <b>Step 5</b> | <b>Identify monitoring requirements</b>             | The final step in the impact assessment process is identification of minimum monitoring requirements. The                                                                                                                                                                                                                 |

|  |  |                                                                                                                                                                                                                                                      |
|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | scope and frequency of the monitoring required depends on the residual impact. The purpose of monitoring is to confirm that the impact is within the predicted limits and to provide timely information if an impact is exceeding acceptable limits. |
|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 6.3 SCREENING OF POTENTIAL E&S IMPACTS

The preliminary environmental assessment for the Subproject has been undertaken using the Rapid Environmental Assessment (REA) Checklist for Restoration and Rehabilitation of Flood protection bunds. The REA is used for identification and screening of likely E&S impacts. Table 6.2 lists impacts against different Subproject activities.

Table 6-2: Stepwise Methodology for Impact Assessment

| Activities                                        | Impacts                                                                       |
|---------------------------------------------------|-------------------------------------------------------------------------------|
| Construction camps, workshops etc.                | Waste generation                                                              |
| Leveling/cutting of bushes & earthwork operations | Flora damage, soil erosion, ecosystem deterioration                           |
| Excavation operations at burrow & quarry areas    | Dust pollution                                                                |
| Construction material, storage and handling       | Fumes emissions, chemical infiltrations and slight ground water contamination |
| Operation of concrete batching plant              | Air pollutants emissions, wastewater generation and solid waste generation    |
| Use of bulldozers,                                | Noise pollution, vibration and dust emission                                  |
| Use of generators                                 | Particulate matter emission                                                   |
| Heavy equipment/machineries                       | Lubricants infiltration, noise and vibration.                                 |
| Movement of vehicles                              | Dust emission                                                                 |
| Generation of Wastewater                          | Contamination of soil and nearby vegetation, and disturbance of aesthetic     |
| Generation of solid waste                         | Odor, disturbance of aesthetics                                               |

#### 6.3.1 Impact Matrices

Leopold Matrix (LM) is a procedure for the evaluation of impact of a proposed development activity on the biophysical and socioeconomic environment. The LM provides a system for the analysis and numerical weighting of probable impacts. The analysis does not produce an overall quantitative rating; instead, it portrays many value judgments. A primary purpose is to ensure that the impact of alternative actions is evaluated and considered in the planning of Subproject.

This matrix has horizontal axis which has the impact characteristics, and the vertical axis has existing E&S components which may be affected during the Subproject implementation. This provides a format for comprehensive review of the interactions between proposed actions and environmental factors.

E&S impacts are evaluated against the existing environment and evaluating potential impacts through descriptions of how an environmental effect will occur, how the Subproject will interact with the E&S conditions, and how mitigation measures reduce or eliminate the effect. The anticipated impacts can be categorized as:

**Direct Impacts:** Direct impacts occur through direct interaction of an activity with E&S component. For example, a discharge of an effluent from project site may lead to slight contamination of the site or soil.

**Indirect Impacts:** Indirect impacts are not a direct result of the project, often produced away from or because of a complex impact pathway. The indirect impacts are also termed as secondary or even third level impacts. For example, sulphurs in ambient air rise due to emissions during the project activities but in this restoration activity of flood protection bund there are no such impacts.

**Induced Impacts:** The cumulative impacts can be, due to induced actions of projects and activities that may occur if the action under assessment is implemented such as growth inducing impacts and other effects related to induced changes to the pattern of future land use or population density or growth rate. Increase in workforce and nearby communities contributes to this effect.

These groups of impacts can be further divided according to their nature into:

- Positive and negative impact
- Minor, major and moderate impact
- Local and widespread impact
- Temporary and permanent impact
- Short and long-term impact
- Reversible and irreversible impact

During construction and operation phases of Subproject the characterization of potential impact has been classified based on the above characteristics. The characterization of potential E&S impacts is given in Table 6.1 and Table 6.2 for both construction and operation phases.

Furthermore, to indicate the magnitude and frequency of impacts, both E&S impact evaluation matrices have also been formulated for construction and operational phase. The evaluation of E&S impacts during construction and operation phases is shown in Table 6.3 and Table 6.4. Thus, the following scale has been used in evaluation of potential impacts:

**Negligible or No Impact:** The impact which has obscure and negligible influence on physical, ecological and socio-economic environment

**Low Adverse Impact:** The impact that has a slight influence on the physical, ecological and socioeconomic environment during construction and operation phases

**Medium Adverse Impact:** The impact which can be eliminated or mitigated after applying appropriate mitigation measures

**High Adverse Impact:** The impact which can be partially, but not fully mitigated by applying the mitigation measure

**Positive Impact:** The impact that enhances natural and socio-economic environment will be positive impact

Identification of a significant E&S indicators/parameters has been carried out based on the existing E&S conditions into the project phases, e.g. design, construction and operation phases.

#### 6.4 CUMULATIVE IMPACTS

In compliance with the requirements of ESS1 of the World Bank's Environmental and Social Framework (ESF), the assessment has examined the potential for cumulative environmental and social impacts that could arise from the proposed sub-project in conjunction with other existing,

ongoing, or reasonably foreseeable future developments within its Area of Influence (AoI). The analysis included consultations with relevant district and provincial departments, review of available development plans and records, and field reconnaissance to identify any parallel or planned infrastructure activities that may interact with the proposed interventions at Zain ul Abideen Khan Khoso Flood Protection Bund (FPB).

The review confirmed that no major infrastructure, industrial, agricultural, or settlement expansion projects currently exist or are planned in the vicinity that could result in additive or synergistic impacts when combined with the proposed works. The sub-project primarily involves the rehabilitation and strengthening of an existing flood protection embankment within an already disturbed corridor. Consequently, the potential environmental and social impacts are limited in spatial extent, short-term in duration, and readily mitigable through the measures prescribed in this ESMP.

Implementation of the mitigation and monitoring measures outlined in Sections 7 and 8 will further minimize any residual impacts that could arise during construction and operation phases. Based on the nature, scale, and location of the sub-project, as well as the absence of other significant concurrent activities in the surrounding area, no adverse cumulative impacts are anticipated. Conversely, the sub-project is expected to yield beneficial cumulative outcomes by improving regional flood resilience, protecting agricultural lands, settlements, and critical infrastructure, and thereby contributing to enhanced socio-economic stability and disaster preparedness within the project area.

Table 6-3: Characterization of E&S Impacts for Construction Phase

| Environmental Component                                   | Impact Characteristics |          |          |       |          |          |           |              |        |       |              |          |     |               |              |
|-----------------------------------------------------------|------------------------|----------|----------|-------|----------|----------|-----------|--------------|--------|-------|--------------|----------|-----|---------------|--------------|
|                                                           | Direction              |          | Duration |       | Location |          | Frequency |              | Extent |       | Significance |          |     | Reversibility |              |
|                                                           | Positive               | Negative | Long     | Short | Direct   | Indirect | Cont.     | Intermittent | Wide   | Local | High         | Moderate | Low | Reversible    | Irreversible |
| Topography                                                | ★                      |          | ★        |       |          | •        |           | •            |        | •     | •            |          |     | ★             |              |
| Surface water quality                                     | ★                      |          | ★        |       | ★        |          |           | •            |        | •     |              | •        |     | ★             |              |
| Ground water quality                                      | ★                      |          | ★        |       | ★        |          |           | •            |        | •     |              | •        |     | ★             |              |
| Ambient air quality                                       |                        | •        |          | •     | ★        |          |           | •            |        | •     |              | •        |     | ★             |              |
| Noise level                                               |                        | •        |          | •     | ★        |          |           | •            |        | •     |              | •        |     | ★             |              |
| Soil quality                                              | ★                      |          |          | •     | ★        |          |           | •            |        | •     |              | •        |     | ★             |              |
| Solid waste                                               |                        | •        |          | •     | ★        |          |           | •            |        | •     |              | •        |     | ★             |              |
| Construction Camps                                        |                        | •        |          | •     | ★        |          |           | •            |        | •     |              | •        |     | ★             |              |
| <b>Flora:</b>                                             |                        |          |          |       |          |          |           |              |        |       |              |          |     |               |              |
| Shrubs                                                    |                        | •        |          | •     | •        |          |           | •            |        | •     |              |          | •   | ★             |              |
| Trees                                                     |                        | •        |          |       |          | •        |           | •            |        | •     |              | •        |     | ★             |              |
| <b>Fauna:</b>                                             |                        |          |          |       |          |          |           |              |        |       |              |          |     |               |              |
| Mammals                                                   |                        | •        |          | •     |          | •        |           | •            |        | •     |              | •        |     | ★             |              |
| Birds                                                     |                        | •        |          | •     | ★        |          |           | •            |        | •     |              | •        |     | ★             |              |
| Health and safety                                         | ★                      |          |          | •     | ★        |          |           | •            |        | •     |              | •        |     | ★             |              |
| Community health and safety                               | ★                      |          |          | •     | ★        |          |           | •            |        | •     |              |          | •   | ★             |              |
| Economic activity                                         | ★                      |          | ★        |       | ★        |          | •         | •            | •      | •     | •            |          |     |               |              |
| <b>Legend:</b><br>Negative Impact (•) Positive Impact (★) |                        |          |          |       |          |          |           |              |        |       |              |          |     |               |              |

Table 6-4: Characterization of Potential E&S Impacts for Operation Phase

| Environmental Component                                   | Impact Characteristics |          |          |       |          |          |           |              |        |       |              |          |       |               |              |
|-----------------------------------------------------------|------------------------|----------|----------|-------|----------|----------|-----------|--------------|--------|-------|--------------|----------|-------|---------------|--------------|
|                                                           | Direction              |          | Duration |       | Location |          | Frequency |              | Extent |       | Significance |          |       | Reversibility |              |
|                                                           | Positive               | Negative | Long     | Short | Direct   | Indirect | Cont.     | Intermittent | Wide   | Local | Large        | Moderate | Small | Reversible    | Irreversible |
| Air quality                                               | ★                      |          | ★        |       | ★        |          | ★         |              |        | ★     | ★            |          |       | ★             |              |
| Water quality                                             | ★                      |          | ★        |       | ★        |          | ★         |              |        | ★     | ★            |          |       | ★             |              |
| Noise level                                               | ★                      |          | ★        |       | ★        |          | ★         |              |        | ★     | ★            |          |       | ★             |              |
| Road safety                                               | ★                      |          | ★        |       | ★        |          | ★         |              |        | ★     | ★            |          |       | ★             |              |
| Landscaping                                               | ★                      |          | ★        |       | ★        |          | ★         |              |        | ★     |              | ★        |       | ★             |              |
| Community development                                     | ★                      |          | ★        |       | ★        |          | ★         |              |        | ★     |              | ★        |       | ★             |              |
| Traffic condition                                         | ★                      |          | ★        |       |          |          |           |              |        |       |              |          |       |               |              |
| Lifestyle of people                                       | ★                      |          | ★        |       | ★        |          | ★         |              |        | ★     |              | ★        |       | ★             |              |
| <b>Flora:</b>                                             |                        |          |          |       |          |          |           |              |        |       |              |          |       |               |              |
| Shrubs                                                    | ★                      |          | ★        |       | ★        |          | ★         |              |        | ★     |              | ★        |       | ★             |              |
| Trees                                                     | ★                      |          | ★        |       | ★        |          | ★         |              |        | ★     |              | ★        |       | ★             |              |
| <b>Fauna:</b>                                             |                        |          |          |       |          |          |           |              |        |       |              |          |       |               |              |
| Mammals                                                   | ★                      |          | ★        |       | ★        |          | ★         |              |        | ★     |              | ★        |       | ★             |              |
| Birds                                                     | ★                      |          | ★        |       | ★        |          | ★         |              |        | ★     |              | ★        |       | ★             |              |
| <b>Legend:</b><br>Negative Impact (●) Positive Impact (★) |                        |          |          |       |          |          |           |              |        |       |              |          |       |               |              |

Table 6-5: E&S Impacts Evaluation during Construction Phase

| Sr. No. | Environmental Component                           | Physical Environment |              |           |                       |                     |                 |             |                   | Ecological Environment |       | Socio economic Environment |                                |            |                |                   |                   |
|---------|---------------------------------------------------|----------------------|--------------|-----------|-----------------------|---------------------|-----------------|-------------|-------------------|------------------------|-------|----------------------------|--------------------------------|------------|----------------|-------------------|-------------------|
|         |                                                   | Topography           | Soil quality | Landscape | Surface Water quality | Groundwater quality | Slope stability | Air quality | Noise & vibration | Flora                  | Fauna | Social disturbance         | Disruption of Public utilities | Employment | Traffic issues | Economic activity | Health and safety |
|         | Project Activities                                |                      |              |           |                       |                     |                 |             |                   |                        |       |                            |                                |            |                |                   |                   |
| 1       | Construction camps, workshops etc.                | LA                   | 0            | 0         | LA                    | MB                  | LA              | LA          | LA                | LA                     | LA    | LA                         | 0                              | 0          | LA             | 0                 | LA                |
| 2       | Levelling/tree cutting                            | LA                   | LA           | 0         | LA                    | LA                  | LA              | LA          | LA                | LA                     | LA    | 0                          | 0                              | 0          | LA             | 0                 | LA                |
| 3       | Excavation operations                             | LA                   | LA           | LA        | LA                    | 0                   | LA              | LA          | LA                | LA                     | LA    | LA                         | 0                              | 0          | LA             | 0                 | LA                |
| 4       | Construction material, storage and handling       | 0                    | LA           | 0         | 0                     | LA                  | 0               | 0           | 0                 | 0                      | 0     | 0                          | 0                              | 0          | LA             | 0                 | LA                |
| 5       | Open storage of construction materials, fuel etc. | 0                    | LA           | 0         | 0                     | LA                  | 0               | LA          | 0                 | 0                      | 0     | 0                          | 0                              | 0          | LA             | 0                 | LA                |
| 6       | Solid waste generation and handling               | LA                   | LA           | LA        | LA                    | LA                  | 0               | LA          | 0                 | LA                     | LA    | LA                         | 0                              | 0          | 0              | 0                 | LA                |

|                                                                                                                                                                                 |                                      |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----|----|----|----|----|----|----|----|----|----|----|---|---|----|---|----|
| 7                                                                                                                                                                               | Use of Chemicals                     | 0  | 0  | 0  | LA | LA | LA | LA | 0  | LA | LA | LA | 0 | 0 | 0  | 0 | 0  |
| 8                                                                                                                                                                               | Earthwork operations                 | LA | LA | LA | LA | 0  | 0  | LA | LA | LA | LA | LA | 0 | 0 | LA | 0 | LA |
| 9                                                                                                                                                                               | Operation of concrete batching plant | LA | LA | LA | LA | 0  | LA | 0  | LA | 0  | 0  | LA | 0 | 0 | 0  | 0 | LA |
| 10                                                                                                                                                                              | Use of generators                    | LA | LA | 0  | LA | 0  | LA | LA | MA | 0  | LA | LA | 0 | 0 | 0  | 0 | LA |
| 11                                                                                                                                                                              | Heavy equipment/machineries          | LA | LA | LA | LA | LA | LA | LA | LA | LA | LA | LA | 0 | 0 | 0  | 0 | LA |
| 12                                                                                                                                                                              | Plantation along RoW                 | LB | MB | MB | 0  | 0  | MB | MB | MB | MB | MB | 0  | 0 | 0 | 0  | 0 | 0  |
| <b>Legend:</b><br><b>O = No impact LA = Low Adverse MA = Medium Adverse HA = High Adverse MB = Medium Beneficial HB = High Beneficial LB = Low Beneficial NA=Not Applicable</b> |                                      |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |    |

Table 6-6: E&S Impacts Evaluation during Operation Phase

| Sr. No.                                                                                                                                                                        | Environmental Components<br>Project Activities | Physical Environment |              |           |                       |                     |                 |             |                   | Ecological Environment |       | Socio Economic Environment |                        |            |                      |               |                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------|--------------|-----------|-----------------------|---------------------|-----------------|-------------|-------------------|------------------------|-------|----------------------------|------------------------|------------|----------------------|---------------|-------------------|
|                                                                                                                                                                                |                                                | Topography           | Soil quality | Landscape | Surface water quality | Groundwater quality | Slope stability | Air quality | Noise & vibration | Flora                  | Fauna | Land use                   | Population disturbance | Employment | Communication system | Public safety | Economic activity |
| 1                                                                                                                                                                              | Movement of vehicles                           | 0                    | 0            | 0         | MB                    | MB                  | MB              | HB          | HB                | 0                      | 0     | 0                          | 0                      | MB         | HB                   | HB            | MB                |
| 2                                                                                                                                                                              | Stormwater                                     | 0                    | LA           | 0         | LA                    | LA                  | LA              | LA          | LA                | LA                     | LA    | LA                         | LA                     | 0          | LA                   | 0             | 0                 |
| 3                                                                                                                                                                              | Solid waste                                    | 0                    | LA           | LA        | LA                    | LA                  | 0               | LA          | 0                 | LA                     | LA    | LA                         | LA                     | 0          | 0                    | LA            | 0                 |
| 4                                                                                                                                                                              | Traffic control                                | 0                    | 0            | 0         | 0                     | 0                   | 0               | HB          | HB                | 0                      | 0     | 0                          | 0                      | 0          | 0                    | HB            | MB                |
| 5                                                                                                                                                                              | Maintenance of infrastructure                  | LA                   | LA           | LA        | LA                    | LA                  | LA              | LA          | LA                | LA                     | LA    | 0                          | LA                     | 0          | LA                   | LA            | 0                 |
| 7                                                                                                                                                                              | Maintenance of road                            | 0                    | LA           | 0         | 0                     | 0                   | 0               | LA          | LA                | MB                     | 0     | 0                          | 0                      | 0          | 0                    | 0             | 0                 |
| 8                                                                                                                                                                              | Road accidents                                 | 0                    | 0            | 0         | 0                     | 0                   | 0               | 0           | 0                 | 0                      | 0     | NA                         | NA                     | NA         | LA                   | MA            | NA                |
| 9                                                                                                                                                                              | Maintenance of flora species                   | 0                    | MB           | MB        | 0                     | 0                   | 0               | HB          | 0                 | MB                     | 0     | 0                          | 0                      | 0          | 0                    | NA            | 0                 |
| 10                                                                                                                                                                             | Conservation of faunal species                 | 0                    | 0            | 0         | 0                     | 0                   | 0               | 0           | 0                 | HB                     | HB    | 0                          | 0                      | 0          | 0                    | 0             | 0                 |
| <b>Legend:</b><br><b>O =No impact NA=Not Applicable LA = Low Adverse MA = Medium Adverse LB = Low Beneficial MB = Medium Beneficial HB = High Beneficial HA = High Adverse</b> |                                                |                      |              |           |                       |                     |                 |             |                   |                        |       |                            |                        |            |                      |               |                   |

## 6.5 ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

This chapter presents a comprehensive assessment of the Environmental and Social Risks and impacts associated with the Sub-project during the design, construction, and operation phases. The assessment follows a risk-based approach consistent with the World Bank Environmental and Social Framework (ESF) and applicable national regulations.

Environmental and social aspects are addressed under separate sections, and each impact category is discussed under a standalone heading, followed by clearly defined impacts and detailed mitigation measures. All mitigation measures are designed to be implementable, enforceable, and monitorable, similar in rigor to the Traffic and Construction Safety Management framework.

### 6.5.1 Environmental Impacts

#### 6.5.1.1 Topography and Soil Stability

The Subproject involves reconstruction and rehabilitation of flood protection bunds and related structures. These works may result in localized changes to landform and soil characteristics within the project footprint.

#### Impacts / Risks

- **Design Phase**
  - Modification of existing landform due to embankment alignment and slope geometry.
  - Increased erosion potential if slopes and drainage are inadequately designed.
- **Construction Phase**
  - Soil erosion and sediment transport due to excavation and earthworks.
  - Soil contamination from fuel, oil, and lubricant spills.
  - Land degradation, water ponding, and vector breeding due to unrehabilitated borrow pits.
- **Operation Phase**
  - No significant long-term impacts anticipated if construction is properly managed.

#### Mitigation Measures

Topography and soil-related risks shall be managed through design optimization and controlled construction practices, implemented by the Contractor and supervised by the Engineer.

#### Design Phase

##### ▪ Optimization of Alignment and Layout

The alignment and layout of flood protection bunds and associated structures shall be optimized during design to minimize cut-and-fill operations and disturbance to existing landforms. Designs shall, to the extent practicable, follow natural ground contours to reduce earthworks, material transport, and risks of slope instability.

##### ▪ Embankment Slope Design and Surface Protection

Embankment slopes shall be designed with stable, erosion-resistant gradients in accordance with applicable engineering standards. Suitable surface protection measures, such as stone pitching, turfing, riprap, or geotextiles, shall be incorporated to protect slopes against rainfall runoff, flood flows, and surface erosion.

- **Integration of Adequate Surface Drainage**

Adequate surface drainage systems shall be incorporated into the design, including side drains, toe drains, chutes, and cross-drainage structures, to safely convey runoff and prevent concentration of flows on embankment slopes. Proper drainage design shall reduce risks of erosion, waterlogging, gullying, and slope failure.

### **Construction Phase**

- **Phased Excavation and Filling**

- Excavation and filling works shall be carried out in a phased and controlled manner, limiting the extent of exposed soil surfaces at any given time. Construction sequencing shall be planned to reduce vulnerability to erosion, particularly during periods of rainfall.

- **Prompt Stabilization of Exposed Surfaces**

- All exposed soil surfaces shall be stabilized promptly through compaction, temporary coverings, mulching, or other suitable protective measures. Temporary stabilization shall remain in place until permanent erosion protection works are completed.

### **Management of Fuel, Oil, and Lubricants**

- Designated areas for fuel storage, refueling, and equipment maintenance shall be established away from watercourses and sensitive land uses. These areas shall be provided with impervious flooring, drip trays, and spill kits. Site personnel shall be trained in spill prevention and response, and any accidental spills shall be cleaned immediately and disposed of in accordance with approved procedures.

### **Borrow Material Sourcing and Rehabilitation**

- Borrow material shall be sourced only from approved and authorized locations. Upon completion of use, borrow pits shall be rehabilitated through re-grading, drainage provision, and restoration to prevent land degradation, water ponding, and vector breeding. Where feasible, rehabilitated areas shall be returned to stable or productive land use.

### **Avoidance of Productive Agricultural Land**

- Construction activities shall avoid productive agricultural land and adjacent areas to the maximum extent practicable. Where temporary disturbance is unavoidable, affected areas shall be restored to pre-construction conditions, including replacement of topsoil, re-grading, and drainage restoration.

### **Operation Phase**

- No significant long-term impacts on topography or soil characteristics are anticipated during the operation phase, if construction is carried out in accordance with approved designs and embankments and drainage systems are regularly inspected and maintained.

#### **6.5.1.2 Climate Change and Climate Resilience**

Pakistan is among the most climate-vulnerable countries, particularly to increased rainfall intensity and flooding. The Subproject is fundamentally a climate adaptation intervention intended to enhance flood resilience.

### **Impacts / Risks**

- **Design Phase**
  - Reduced effectiveness of flood protection structures if future climate extremes are not considered.
- **Construction and Operation Phases**
  - No direct climate-induced impacts beyond those addressed through design.

### Mitigation Measures

Climate resilience shall be systematically embedded into the project design, led by the Design Consultants and verified by the Employer/Client, to ensure the long-term effectiveness of flood protection structures under changing climate conditions.

The climate resilience design of the Zain ul Abideen Khan Khoso Flood Protection Bund (FPB) has been developed to improve protection against future flood risks and enhance the hydraulic performance of the drainage system under increasing flow conditions. The proposed scheme is associated with the Zain ul Abideen Khan Khoso Drain, which has been designed for a discharge capacity of 4.80 cumecs over a total length of 2,250 m. The proposed drain section comprises a drain depth of 2.80 m, bottom width of 2.80 m, side slopes of 1.5H:1V, berm height of 1.50 m, berm width of 4.0 m, and a bed slope of 0.000254 m/m to ensure hydraulic stability and efficient flow conveyance. The flood protection measures incorporated under the subproject have been planned to improve channel confinement, reduce overtopping potential, and minimize erosion risks during high-flow events. The adopted geometric configuration and protection arrangements enhance the resilience of the scheme by ensuring adequate flow carrying capacity, embankment stability, and improved protection of adjoining agricultural land, infrastructure, and settlements against future flood events and climate-induced hydrological variability.

### Design Phase

- **Design of Embankment Heights and Freeboard under Extreme Scenarios**

Embankment crest levels and freeboard shall be designed considering extreme rainfall and flood scenarios, including observed historical extremes and projected future climate variability. Design floods shall be assessed using conservative assumptions to account for uncertainty in climate projections, ensuring that embankments maintain adequate safety margins against overtopping under future conditions.

- **Review of Hydrological Assumptions against Recent Events and Projections**

Baseline hydrological assumptions shall be reviewed and updated, as necessary, based on recent flood events, observed rainfall trends, and available climate projections. Where feasible, sensitivity analyses shall be undertaken to assess system performance under a range of plausible future scenarios, and design parameters shall be adjusted accordingly to enhance robustness.

- **Construction and Operation Phases**

No additional climate-induced risks are anticipated during construction and operation beyond those addressed through climate-informed design measures, provided that structures are constructed in accordance with approved designs and maintained appropriately.

#### 6.5.1.3 Ambient Air Quality

Construction activities may temporarily affect air quality due to dust generation and exhaust emissions, potentially impacting workers and nearby communities.

### Impacts / Risks

- **Construction Phase**

- Fugitive dust from excavation, hauling, and stockpiles.
- Exhaust emissions from construction machinery, generators, and vehicles.

- **Operation Phase**

- Minor increase in vehicular emissions along the improved corridor.

**Mitigation Measures**

Air quality impacts arising from construction and operation activities shall be managed through a combination of engineering controls, good construction practices, and routine monitoring, implemented by the Contractor and supervised by the Engineer.

**Construction Phase**

- **Regular Water Sprinkling**

The Contractor shall implement regular water sprinkling on exposed surfaces, haul roads, access routes, stockpiles, and excavation areas, particularly during dry and windy conditions. The frequency of sprinkling shall be adjusted based on site conditions to effectively suppress fugitive dust without causing waterlogging.

- **Covering of Construction Materials during Transportation**

All fine construction materials, including soil, sand, aggregates, and debris, shall be covered during transportation using tarpaulins or equivalent methods to prevent dust dispersion along haul routes and nearby settlements.

- **Maintenance of Machinery and Vehicles**

Construction machinery, generators, and vehicles shall be properly maintained and regularly tuned in accordance with manufacturer specifications to minimize exhaust emissions. Equipment emitting excessive smoke or noise shall be removed from service until repaired.

- **Respiratory Protection for Workers**

Workers exposed to dusty conditions shall be provided with appropriate respiratory protection, such as dust masks or respirators, depending on exposure levels. Workers shall be trained in the correct use and maintenance of respiratory protective equipment.

- **Prohibition of Open Burning**

Open burning of construction debris, excavated material, or camp waste shall be strictly prohibited. All waste shall be collected, stored, and disposed of through approved disposal methods in accordance with applicable environmental regulations.

**Operation Phase**

- **Roadside Plantation with Locally Suitable Species**

Roadside plantation shall be undertaken using locally suitable and native species to act as a natural dust barrier, improve microclimate, and enhance visual aesthetics. Plantation areas shall be maintained until vegetation is established.

- **Maintenance of Paved Surfaces**

Paved and improved surfaces shall be maintained in good condition to minimize dust generation during operation. Any damaged sections shall be repaired promptly to prevent surface degradation and dust emissions.

- **Enforcement of Vehicle Emission Standards**

Applicable vehicle emission standards shall be enforced during operation through coordination with relevant authorities. Regular inspection and maintenance of project-related vehicles shall be encouraged to minimize exhaust emissions.

**Monitoring and Supervision**

Air quality mitigation measures shall be monitored regularly by the Contractor and supervising Engineer. Visual inspections shall be carried out to assess dust levels, and corrective actions shall be implemented promptly where excessive emissions are observed.

**6.5.1.4 Noise and Vibration**

Noise and vibration generated by construction machinery may cause temporary disturbance to nearby settlements and sensitive receptors.

**Impacts / Risks**

- **Construction Phase**

- Elevated noise levels from heavy machinery, generators, and transport vehicles.
- Disturbance to schools, mosques, and residential areas.

- **Operation Phase**

- Reduced noise levels due to smoother road surface and improved alignment.

**Mitigation Measures**

Noise and vibration impacts arising from construction activities shall be managed through appropriate equipment selection, controlled work scheduling, worker protection, and monitoring, implemented by the Contractor and supervised by the Engineer.

**Construction Phase**

- **Use of Modern Equipment with Noise Control Features**

The Contractor shall use modern, well-maintained construction machinery fitted with effective silencers, mufflers, and noise-dampening devices. Equipment generating excessive noise due to poor maintenance or defects shall be repaired or replaced promptly.

- **Scheduling of High-Noise Activities**

High-noise construction activities shall be restricted to daytime working hours and scheduled to avoid sensitive periods, including school hours, prayer times, and community events, to the extent practicable. Advance notice shall be provided to nearby communities when noisy activities are unavoidable.

- **Prohibition of Pressure Horns near Sensitive Receptors**

The use of pressure horns and unnecessary vehicle honking shall be strictly prohibited near settlements, schools, mosques, and other sensitive receptors. Appropriate signage shall be installed, and drivers shall be instructed accordingly.

- **Provision of Hearing Protection to Workers**

Workers exposed to high noise levels shall be provided with appropriate hearing protection, such as earplugs or earmuffs. Workers shall be trained in the correct use of hearing protection, and exposure durations shall be managed where necessary.

- **Periodic Noise Monitoring**

The Contractor shall conduct periodic noise monitoring at representative locations, particularly near sensitive receptors, to verify compliance with applicable national and international noise standards. Monitoring results shall be recorded and corrective actions taken if exceedances are identified.

**Operation Phase**

Noise levels during the operation phase are expected to be lower than during construction, due to smoother road surfaces and improved alignment. No additional mitigation measures are anticipated beyond routine maintenance.

#### **6.5.1.5 Surface and Groundwater Quality**

Surface water bodies and groundwater may be affected if fuels, chemicals, wastewater, or construction debris are not properly managed.

#### **Impacts / Risks**

##### **Construction Phase**

- Contamination from fuel, oil, lubricants, and sanitary wastewater.
- Pollution of irrigation channels and drains.

##### **Operation Phase**

- No significant impacts anticipated.

#### **Mitigation Measures**

- Protection of surface water bodies and groundwater resources shall be ensured through preventive, containment, and good housekeeping measures, implemented by the Contractor under the supervision of the Engineer.

##### **Construction Phase**

##### **▪ Installation of Septic Tanks and Settling Ponds**

- Construction camps shall be equipped with properly designed septic tanks and settling ponds to manage sanitary wastewater and runoff from washing areas. These facilities shall be sized appropriately for the workforce, regularly maintained, and dislodged as required to prevent leakage, overflow, or contamination of surrounding soil and water bodies.

##### **▪ Prohibition of Vehicle and Machinery Washing near Water Bodies**

- Washing of vehicles, machinery, and equipment near rivers, canals, drains, or other water bodies shall be strictly prohibited. Designated washing areas shall be established away from water sources, provided with oil-water separators or sediment traps where necessary to prevent discharge of contaminants.

##### **▪ Location of Camps, Workshops, and Fuel Storage Areas**

- Construction camps, workshops, fuel storage, and refueling areas shall be located at least 1 km away from surface water bodies and groundwater abstraction points, where practicable. These areas shall be provided with impervious surfaces, drainage controls, and spill containment measures to minimize the risk of contamination.

##### **▪ Prevention of Construction Debris Entering Waterways**

- The Contractor shall implement measures to prevent construction debris, excavated material, and waste from entering irrigation channels, drains, or natural watercourses. Temporary barriers, silt fences, and proper waste storage shall be used as required. Regular site housekeeping shall be maintained to keep waterways free of debris.

##### **Operation Phase**

- No significant impacts on surface water or groundwater quality are anticipated during the operation phase, provided that construction-phase mitigation measures are properly implemented and sites are restored following completion of works.

**6.5.1.6 Waste Management**

Construction activities will generate solid, hazardous, and oily waste requiring proper handling and disposal, waste management plan is provided as **Annexure-S** for reference.

**Impacts / Risks****Construction Phase**

- Soil and water contamination due to improper waste handling.

**Operation Phase**

- Minimal non-hazardous waste generation.

**Mitigation Measures**

- Solid, hazardous, and oily wastes generated during construction shall be managed through a structured waste management system, implemented by the Contractor under the supervision of the Engineer, to prevent contamination of soil, water, and the surrounding environment. waste handling described in waste management plan is provided as Annexure-R.

**Construction Phase****▪ Segregation of Hazardous and Non-Hazardous Waste at Source**

- All wastes shall be segregated at source into hazardous and non-hazardous categories. Clearly labelled containers shall be provided at construction sites and camps to ensure proper separation, storage, and handling of different waste streams.

**▪ Disposal at Approved Sites**

- Waste shall be disposed of only at sites approved by relevant local authorities. Disposal records shall be maintained to document quantities, types of waste, and disposal locations. Unauthorized dumping or burning of waste shall be strictly prohibited.

**▪ Management and Disposal of Used Oil**

- Used oil, lubricants, and oily waste shall be collected in sealed, leak-proof containers and stored in designated areas with secondary containment. Disposal shall be carried out through licensed recyclers or authorized waste handlers, in accordance with applicable regulations.

**▪ Spill Response Materials and Procedures**

- Fuel storage and handling areas shall be equipped with spill response materials, including absorbents, sand, and containment booms. Clear procedures shall be established for spill prevention, containment, and cleanup. Personnel shall be trained in spill response, and any spills shall be addressed immediately.

**▪ Reuse of Scarified or Milled Bituminous Material**

- Where feasible, scarified or milled bituminous material shall be reused in construction works, such as sub-base or shoulder layers, to reduce waste generation and demand for new materials. Reuse shall comply with applicable technical specifications and quality standards.

## Operation Phase

- During the operation phase, only minimal quantities of non-hazardous waste are anticipated. Such waste shall be managed through routine collection and disposal in accordance with local waste management practices.

### 6.5.1.7 Sediment Testing and Management Protocol

Prior to any de-silting or excavation activities, the Contractor shall implement the following mandatory sediment testing and management protocol:

#### 1. Sample Collection

The Contractor shall collect a minimum of three (3) representative sediment and soil samples from locations along the proposed Zain ul Abideen Khan Khoso Flood Protection Bund alignment (approximately 2.25 km, RD 15+800 to RD 18+050). Samples shall be collected from locations evenly distributed along the flood protection bund alignment, including embankment foundation areas, excavation locations, and any location where visual inspection indicates potential contamination (e.g., discoloration, unusual odor, evidence of waste disposal, or proximity to settlements and drainage channels). Each sample shall weigh a minimum of 2 kg and shall be collected, preserved, handled, and transported in accordance with internationally recognized sampling standards.

#### 2. Laboratory Accreditation

All sediment sampling and testing shall be carried out by a laboratory accredited to **ISO/IEC 17025:2017** (General Requirements for the Competence of Testing and Calibration Laboratories) or an equivalent internationally recognized accreditation. The Contractor shall submit the laboratory's accreditation certificate and scope of testing to the Construction Supervision Consultant (CSC) for review and approval prior to sample collection.

#### 3. Testing Parameters

Sediment samples shall be tested for the following parameters:

| Parameter Category        | Specific Parameters                                                                                     | Analytical Method Reference   |
|---------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------|
| Heavy Metals              | Arsenic (As), Lead (Pb), Cadmium (Cd), Chromium (Cr), Mercury (Hg), Nickel (Ni), Copper (Cu), Zinc (Zn) | APHA 3120 / EPA 200.7 / 200.8 |
| Organochlorine Pesticides | DDT, DDE, DDD, Aldrin, Dieldrin, Endrin, Heptachlor, Lindane (gamma-BHC)                                | EPA 8081B / 8270E             |

The laboratory may propose equivalent internationally recognized analytical methods, subject to prior approval by the CSC.

#### 4. Applicable Standards for Compliance Assessment

Test results shall be compared against the following standards:

- For disposal as inert / non-hazardous waste or beneficial reuse (e.g., embankment fill):** The concentration of each tested heavy metal and pesticide shall not exceed the limits specified in **Pakistan NEQS for Municipal Solid Waste (MSW) Disposal Guidelines** or, in the absence of specific NEQS for sediment, US EPA Region 9 Preliminary Remediation Goals (PRGs) for Industrial Soil. The CSC shall approve the applicable benchmark standard prior to testing.

- **For classification as hazardous waste:** If any parameter exceeds the applicable standard above, the sediment shall be classified as hazardous.

## 5. Decision Matrix and Disposal Protocol

| Test Result                               | Classification        | Disposal / Reuse Method                                                                                                                                                                       | Documentation Required                                                                 |
|-------------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| All parameters below applicable standard  | Non-hazardous / Inert | May be reused for embankment fill, berm formation, or disposed of at a licensed inert waste disposal site.                                                                                    | Lab report, CSC approval, waste manifest (if disposed).                                |
| Any parameter exceeds applicable standard | Hazardous Waste       | Shall NOT be reused. Shall be transported by a licensed hazardous waste carrier and disposed of at a facility authorized to receive hazardous waste (e.g., incineration or secured landfill). | Lab report, hazardous waste manifest, certificate of disposal from receiving facility. |

## 6. Record Keeping and Reporting

The Contractor shall submit the following to the CSC prior to commencing any de-silting or excavation:

- Sampling and testing plan, including proposed sampling locations.
- Laboratory test reports for all three (3) samples.

All laboratory reports, waste manifests, and disposal certificates shall be retained by the Contractor and made available for inspection by the PIU. A summary of sediment testing results and disposal quantities shall be included in each monthly ESMP compliance report.

### 6.5.1.8 Vegetation and Tree Removal

The project corridor includes agricultural land with scattered vegetation; no protected areas are present.

#### Impacts / Risks

##### Construction Phase

- Limited vegetation removal for camps and access routes.
- Dust deposition on crops and trees.

##### Operation Phase

- No adverse ecological impacts anticipated.

#### Mitigation Measures

Vegetation-related impacts shall be minimized through controlled and site-specific clearing, protection of adjacent agricultural land, and implementation of compensatory plantation measures. These activities shall be carried out by the Contractor under the supervision of the Engineer to ensure compliance with environmental management requirements.

Compensatory plantation shall be undertaken at a minimum ratio of 1:5, or higher in accordance with applicable regulatory requirements and World Bank standards. Preference shall be given to indigenous and site-specific species with high survival potential and ecological value. Plantation activities shall be carried out along the bund alignment (where feasible), in downstream areas,

and on designated community or government land, in coordination with local stakeholders and the Forest Department, Government of Balochistan. A detailed tree plantation plan is provided in **Annexure-V**.

### **Construction Phase**

#### **▪ Limitation of Vegetation Clearance to Required Areas**

Vegetation clearance shall be strictly limited to areas essential for construction activities such as camps, access routes, and work fronts. Clearing beyond the approved project footprint shall not be permitted. Trees and vegetation outside the construction boundary shall be clearly marked and protected to prevent accidental damage.

#### **▪ Dust Suppression near Agricultural Fields**

Dust suppression measures, including regular water sprinkling, shall be applied near agricultural fields, orchards, and roadside vegetation to minimize dust deposition on crops and trees. The frequency of dust control measures shall be increased during dry and windy conditions.

#### **▪ Protection of Crops from Construction Activities**

The Contractor shall take necessary measures to protect standing crops and vegetation adjacent to construction areas. These measures may include temporary fencing, controlled movement of machinery, and clearly defined access routes to prevent encroachment onto cultivated land. Any accidental damage to crops shall be reported and addressed in accordance with applicable procedures.

#### **▪ Compensatory Plantation**

Compensatory plantation shall be undertaken to offset unavoidable vegetation loss, in consultation with local communities and relevant authorities. Plantation shall use locally suitable and native species, and locations shall be selected to enhance environmental and social benefits. Planted saplings shall be maintained until establishment to ensure survival.

### **Operation Phase**

No adverse ecological impacts are anticipated during the operation phase, provided that construction-phase mitigation measures are effectively implemented, and plantation areas are properly maintained.

#### **6.5.1.9 Hydrological Risks during Construction – Zain ul Abideen Khan Khoso Flood Protection Bund**

The proposed reconstruction of the Zain ul Abideen Khan Khoso Flood Protection Bund involves excavation, embankment formation, filling, compaction, stone pitching, and gabion apron works for erosion and scour protection. The flood protection bund has been designed to protect adjacent settlements, agricultural lands, and public infrastructure from seasonal flood flows originating from upstream catchments during the monsoon season (July to September). Construction activities may temporarily expose incomplete sections of the flood protection bund to flood-related risks and may alter local drainage conditions if not properly managed.

#### **A. Impacts / Risks – Construction Phase**

The following hydrological risks are identified during the construction phase:

##### **1. Sudden flood inflows from upstream catchments**

The project area is exposed to seasonal flood flows generated by upstream catchments. Unseasonal or intense monsoon rainfall may generate sudden flood discharges that could impact partially completed embankment sections. A sudden flood event may result in:

- Overtopping of incomplete bund sections.
- Flooding of adjacent agricultural lands and nearby settlements.
- Worker safety risks, including drowning and entrapment.
- Erosion of partially completed embankment slopes.
- Damage to construction equipment, materials, and temporary works.

## **2. Localized flooding due to obstruction of natural drainage paths**

Construction activities such as excavation, embankment formation, temporary access routes, stockpiling of fill material, and movement of machinery may obstruct natural drainage paths and runoff routes. This may result in:

- Temporary ponding and waterlogging.
- Flooding of nearby agricultural lands.
- Disruption of local drainage patterns.
- Crop damage and reduction in agricultural productivity.

## **3. Failure of temporary flood protection measures during construction**

Temporary earth bunds, diversion arrangements, or partially completed embankment sections may be vulnerable during high-flow events. Failure of these temporary works may result in:

- Localized flooding and overtopping.
- Scour and erosion of completed earthworks.
- Damage to access roads and work areas.
- Delays in project implementation.

## **4. Sediment transport affecting downstream areas**

Excavation, filling, and embankment construction activities may generate loose materials that can be transported by runoff during rainfall events. Uncontrolled sediment movement may affect:

- Downstream drainage channels.
- Agricultural lands.
- Surface water quality.
- Hydraulic efficiency of local drainage systems.

## **5. Embankment instability during saturation**

Partially completed embankment sections may become saturated due to prolonged rainfall or floodwater exposure before compaction and protection works are completed. This may result in:

- Slope slumping or localized embankment failure.
- Increased sediment generation.
- Loss of embankment material.
- Safety hazards for construction workers.

## **B. Mitigation Measures - Design and Construction Phase**

### **Design Phase:**

The flood protection bund has been designed using climate-resilient engineering criteria to improve flood protection and long-term stability. The design incorporates:

- Adequate embankment crest levels based on climate-inclusive hydraulic assessments.
- Stable embankment geometry and side slopes.
- Stone pitching for slope protection against erosion.
- Gabion apron works for scour protection and toe stabilization.
- Adequate freeboard and erosion control measures to enhance resilience during extreme flood events.

## **Construction Phase:**

### **1. Phased construction with maintenance of drainage paths**

- Construction activities shall be phased to maintain existing drainage routes throughout the construction period.
- No more than 500 m of embankment shall remain exposed without temporary stabilization measures.
- Excavated and fill materials shall not be stockpiled within active drainage paths.
- Stockpiles shall be located at least 5 m away from drainage channels and protected during forecast rainfall events.

### **2. Flood monitoring and early warning**

- The Contractor shall establish flood monitoring arrangements and maintain coordination with the Irrigation Department and Pakistan Meteorological Department (PMD).
- Daily weather forecasts shall be reviewed during the monsoon season.
- Trigger levels for suspension of construction activities shall be established.
- Upon issuance of flood warnings, all personnel shall be evacuated to designated safe assembly points and construction activities shall be suspended.

### **3. Emergency flood response measures**

- Emergency response procedures shall be prepared prior to commencement of construction activities.
- Emergency overflow routes shall be identified and marked on site plans.
- Emergency communication and response equipment shall remain available at site.
- Flood emergency drills shall be conducted before each monsoon season.

### **4. Sediment and erosion control**

- Temporary sediment barriers shall be installed around active work areas.
- Runoff from disturbed surfaces shall be controlled through temporary drainage measures.
- Exposed soil surfaces shall be stabilized as early as practicable.
- Sediment accumulation in downstream areas shall be monitored regularly and corrective measures implemented where necessary.

### **5. Protection of agricultural lands and nearby communities**

- Temporary drainage arrangements shall be maintained to prevent flooding of adjacent agricultural lands and settlements.
- Communities and farmers shall be informed in advance regarding activities that may affect local drainage conditions.
- Any construction-related damages shall be addressed in accordance with the Project's Resettlement Policy Framework (RPF) and applicable safeguard procedures.

**6. Construction sequencing of protection works**

- Embankment reconstruction, stone pitching, and gabion apron works shall be sequenced to minimize exposure of vulnerable sections during the monsoon season.
- No incomplete embankment section shall be left unprotected during periods of forecast heavy rainfall.
- Priority shall be given to completion of erosion-prone reaches before onset of monsoon conditions.

**7. Protection of exposed slopes during rainfall**

- Exposed embankment slopes shall be covered with tarpaulins, geotextiles, or other temporary protection materials during forecast heavy rainfall events.
- Temporary drainage swales shall be provided to divert runoff away from embankment faces.
- Weekly inspections shall be conducted to identify erosion, settlement, or slope instability.
- Any identified defects shall be rectified immediately.

**C. Residual Impact**

With implementation of the above measures, residual hydrological risks are expected to be low and manageable. The Contractor shall maintain incident logs and report any flood-related damage, embankment erosion, slope instability, overtopping, or structural damage to the Engineer within 24 hours of occurrence. The flood protection bund is expected to provide significant long-term benefits through improved flood resilience, reduced flood risk, and enhanced protection of agricultural lands, settlements, and public infrastructure within the project area.

**6.5.2 Social Impacts****6.5.2.1 Labour and Working Conditions (ESS2)**

Construction activities will engage skilled and unskilled labour, exposing workers to occupational health and safety risks (**Annexure-Q**).

**Impacts / Risks**

- Accidents involving machinery and equipment.
- Exposure to dust, noise, and vibration.
- Poor living conditions at labour camps if not properly managed.

**Mitigation Measures****Provision of Personal Protective Equipment (PPE) and Safety Training**

- The Contractor shall provide appropriate, task-specific PPE to all workers at no cost, including safety helmets, high-visibility vests, gloves, safety boots, eye protection, hearing protection, and respiratory masks where required. PPE shall comply with internationally recognized standards (e.g., ISO, ANSI, EN) and be replaced regularly.
- Comprehensive occupational health and safety (OHS) training shall be conducted prior to mobilization and periodically throughout construction (**Annexure-Q**). Training shall cover safe operation of machinery, hazard identification, emergency response, working at heights, excavation safety, and electrical safety. Attendance records shall be maintained and refresher training provided after incidents or near-misses.

**Sanitation, Clean Water, and Waste Management at Labour Camps**

- All labour camps shall be designed, constructed, and operated in accordance with national labour laws, WHO guidelines, and ESS2 requirements. Camps shall be provided with adequate potable drinking water, gender-segregated and hygienic sanitation facilities, bathing areas, and proper drainage (**Annexure-N**).
- Solid and liquid waste shall be collected, stored, and disposed of through approved systems to prevent environmental contamination and public health risks. Camps shall be maintained in clean and orderly condition, with routine inspections conducted by the Contractor and supervising Engineer (**Annexure-O**).

#### **Enforcement of Worker Code of Conduct**

- The Contractor shall develop and implement a Worker Code of Conduct (CoC) applicable to all employees, subcontractors, and security personnel (**Annexure-A**). The CoC shall clearly define acceptable behaviour, prohibit harassment, violence, discrimination, substance abuse, and sexual exploitation and abuse (SEA) / sexual harassment (SH). All workers shall be informed of the Code of Conduct in a language they understand and required to sign it prior to deployment. Violations shall be subject to disciplinary measures, including suspension or termination, in accordance with contractual and legal provisions.

#### **First-Aid Facilities and Emergency Medical Arrangements**

- Fully equipped first-aid kits shall be available at all construction sites, camps, and work fronts, and at least one trained first-aid responder shall be present per work shift. The Contractor shall establish emergency response procedures, including arrangements with nearby hospitals or health facilities for emergency treatment. Emergency contact numbers shall be displayed prominently, and transportation shall be available for rapid evacuation of injured workers. Regular drills shall be conducted to test preparedness.

#### **Prohibition of Child Labour and Forced Labour**

- The Contractor shall strictly prohibit child labour and forced or bonded labour, in full compliance with ESS2, national labour legislation, and ILO conventions. No person under the minimum legal working age shall be employed on the Project. Worker age verification procedures shall be implemented prior to hiring, and employment records shall be maintained. Any violations identified shall be reported immediately to the Engineer and relevant authorities, and corrective actions shall be enforced without delay (**Annexure-N**).

#### **Dust, Noise, and Vibration Exposure Management**

- To minimize occupational exposure, the Contractor shall implement dust suppression measures such as water spraying, provide hearing protection near noisy equipment, and limit exposure duration where vibration levels are high. Machinery shall be properly maintained to reduce excessive noise and vibration, and workers shall be rotated where necessary to reduce cumulative exposure.

#### **Monitoring and Compliance**

- The Contractor shall maintain OHS records, including incident logs, training registers, and inspection reports. Compliance with ESS2 requirements shall be monitored regularly by the Engineer, and corrective actions shall be implemented promptly where deficiencies are identified (**Annexure-Q**).

#### **6.5.2.2 Community Health and Safety (ESS4)**

Construction activities may pose safety risks to surrounding communities.

## Impacts / Risks

- Accidents involving community members and construction machinery.
- Unsafe access to construction zones and open excavations.

## Mitigation Measures

### Fencing and Clear Demarcation of Construction Areas

- All active construction zones shall be physically fenced or cordoned off using durable barriers such as metal fencing, barricades, or high-visibility tape, depending on the level of risk. Construction boundaries shall be clearly marked to distinguish work areas from public spaces. Temporary fencing shall be maintained in good condition and relocated as construction progresses to ensure continuous protection of surrounding communities.

### Installation of Warning Signage and Lighting

- The Contractor shall install clearly visible warning signs at all access points, crossings, and high-risk locations, including near machinery movement routes and excavations. Signage shall use internationally recognized symbols, be bilingual where appropriate, and be understandable to local communities (**Annexure-P**).
- Adequate night-time lighting shall be provided around construction sites, access roads, and hazards to ensure visibility and reduce the risk of accidents after dark, particularly in populated areas.

### Barricading of Open Pits and Trenches

- All open excavations, pits, trenches, and foundation works shall be securely barricaded using rigid barriers or fencing. Where feasible, excavations shall be backfilled or temporarily covered when work is suspended. Warning tape alone shall not be used in high-risk areas. Regular inspections shall be conducted to ensure that barricades remain intact and effective.

### Control of Public Access, Particularly by Children

- Uncontrolled access to construction areas shall be strictly prevented through fencing, guarded entry points, and clear exclusion zones. Special attention shall be given to preventing access by children, who may be attracted to construction equipment and excavations.
- Community awareness measures, including briefings to local residents and coordination with community leaders, shall be undertaken to inform the public about construction hazards, restricted areas, and safe alternative routes.

### Maintenance of Emergency Response Arrangements

- The Contractor shall maintain site-specific emergency response procedures to address accidents involving community members, including traffic incidents and falls into excavations. Emergency contact numbers shall be displayed prominently at the site, and site personnel shall be trained to respond promptly and effectively.
- Coordination shall be established with local emergency services, health facilities, and authorities to ensure rapid response in case of incidents affecting the public.

## Monitoring and Compliance

- Community safety measures shall be regularly inspected and monitored by the Contractor and the supervising Engineer. Any deficiencies identified shall be rectified immediately. Community grievances related to safety shall be recorded and addressed through the Project's Grievance Redress Mechanism (GRM).

### 6.5.2.3 Traffic and Construction Safety Management

Traffic and construction safety risks are anticipated during the construction phase due to increased movement of heavy construction vehicles, operation of machinery, temporary road diversions, and interaction between construction activities and the general public. If not properly managed, these risks may result in traffic congestion, accidents involving vehicles or pedestrians, and unsafe access to active construction zones, traffic management plan provided as **Annexure-P**.

### Construction Phase Impacts / Risks

During construction, the following traffic and safety risks may arise:

- Increased traffic volume due to construction vehicles transporting materials and equipment
- Disruption of normal traffic flow and temporary congestion
- Risk of accidents involving pedestrians, cyclists, and local traffic
- Unsafe public access to construction zones, including open pits and machinery operating areas
- Limited visibility and safety risks during night-time or low-visibility conditions

### Mitigation Measures

Traffic and construction safety risks will be managed through a site-specific Traffic and Construction Safety Management Plan (TCSMP) prepared, implemented, and enforced by the Contractor, with oversight by the Supervision Consultants and the Employer.

- Contractor-prepared Traffic and Construction Safety Management Plan**  
The Contractor shall prepare a comprehensive Traffic and Construction Safety Management Plan prior to mobilization. The Plan will define construction traffic routes, haulage schedules, material transport procedures, temporary road closures, diversion routes, pedestrian safety measures, emergency vehicle access, and coordination with local traffic police. The Plan shall also include construction site safety controls such as fencing, barricading, and access restrictions. The Plan will be submitted to the Supervision Consultant for review and approval and updated as construction progresses.
- Traffic Control Personnel**  
Trained traffic personnel shall be deployed at all active work fronts, intersections, haul road crossings, and diversion points. Their responsibilities will include controlling construction vehicle entry and exit, guiding public traffic safely through or around construction areas, assisting pedestrians in crossing active routes, and immediately responding to unsafe traffic situations. Marshals will be equipped with high-visibility clothing, flags, whistles, and two-way communication devices.
- Clearly marked diversions**  
All temporary traffic diversions shall be clearly designed, marked, and maintained for the duration of construction. Diversions will be provided with advance warning signs,

directional signage, reflective barricades, cones, and night-time lighting where required. Diversion routes will be kept free of obstructions, regularly inspected, and adjusted as necessary to ensure safe and continuous movement of traffic, pedestrians, and emergency vehicles.

- **Speed limits near settlements and sensitive receptors**

Reduced speed limits shall be enforced in construction zones and near settlements, schools, mosques, markets, and other sensitive receptors. Speed limit signage will be installed at appropriate intervals, supported by warning signs and speed calming measures such as rumble strips where feasible. All construction vehicle drivers will receive induction training on speed restrictions, and repeated violations will result in disciplinary action or removal from site.

- **Demarcation and access control of construction areas**

All active construction zones shall be clearly demarcated using fencing, barricades, warning tape, and signage to prevent unauthorized public access. Entry points to construction sites will be controlled, and security personnel will be deployed where necessary to restrict access by non-project personnel, particularly children.

- **Management of open excavations and hazardous areas**

Open pits, trenches, and excavations shall be securely barricaded and clearly marked at all times. Where excavations remain open overnight, reflective barriers and warning lights shall be installed. Excavations near public access routes will be covered or protected to prevent accidental falls.

- **Night-time and low-visibility safety measures**

Adequate lighting shall be provided at construction sites, diversions, and access roads during night-time or poor visibility conditions. Reflective signage and barriers will be used to enhance visibility of hazards and guide traffic safely.

- **Coordination with local authorities and communities**

The Contractor shall coordinate with local traffic police, district administration, and community representatives to manage traffic disruptions and address safety concerns. Advance notice will be provided to communities regarding planned road closures, diversions, or high-risk construction activities.

## **Operation Phase Impacts**

No significant traffic or construction safety risks are anticipated during the operation phase, as construction activities will have ceased and normal traffic conditions restored.

## **Residual Risk**

With effective implementation of the Traffic and Construction Safety Management Plan and associated mitigation measures, residual traffic and construction safety risks are expected to be low and manageable.

### **6.5.2.4 Land Acquisition, Access Restriction and ESS5 Risks**

#### **Description**

Although permanent land acquisition is not anticipated, temporary impacts covered under ESS5 may arise.

#### **Impacts / Risks**

- Temporary loss of access to land or livelihoods.
- Impacts on informal users or encroachments.

- Disproportionate impacts on vulnerable households.

### Mitigation Measures

ESS5-related risks shall be managed proactively and in coordination with local authorities and affected communities, even where permanent land acquisition is not required. Volunteer land donation (VLD) will be avoided to the maximum extent possible, and a resettlement plan for temporary displacement is provided for any temporary, physical or economical displacement at the project site. **(Annexure-R)**

- **Avoidance of Private Land and Livelihoods Where Feasible**

Project design and construction planning shall prioritize avoidance of private land, economic activities, and livelihood sources to the maximum extent practicable. Construction methods, work sequencing, and access routes shall be optimized to remain within the existing right-of-way and public land. Where avoidance is not feasible, impacts shall be minimized in duration and extent.

- **Provision of Temporary Alternative Access Arrangements**

Where construction activities temporarily disrupt access to land, houses, shops, farms, or community facilities, the Contractor shall provide safe and functional alternative access arrangements. These may include temporary paths, crossings, ramps, or access bridges, designed to ensure continued movement of people, livestock, and vehicles during construction.

- **Advance Notice to Affected Persons**

All potentially affected persons shall be given timely advance notice prior to the commencement of activities that may restrict access or livelihoods. Notifications shall clearly explain the nature, duration, and timing of the impacts, as well as available mitigation measures and grievance channels. Information shall be communicated in a language and manner understandable to the affected communities.

- **Maintenance of a Functional Grievance Redress Mechanism (GRM)**

The project-level Grievance Redress Mechanism shall be maintained and made accessible to all affected persons, including informal users. The GRM shall allow for the timely registration, assessment, and resolution of complaints related to access restrictions, livelihood impacts, or other ESS5-related concerns. Grievance records shall be maintained, and resolutions shall be communicated transparently to complainants.

- **Targeted Assistance to Vulnerable Households**

Vulnerable households including female-headed households, the elderly, persons with disabilities, landless persons, and low-income groups shall receive targeted assistance to avoid disproportionate adverse impacts. Assistance may include additional consultations, priority restoration of access, livelihood support, or other context-appropriate measures identified in consultation with the affected persons.

- **Monitoring and Documentation**

Temporary land access restrictions and associated mitigation measures shall be documented and monitored by the Contractor and supervising Engineer. Any unanticipated impacts shall be promptly addressed in accordance with ESS5 principles, and corrective actions shall be implemented without delay.

### 6.5.2.5 Impact on Population on Downstream Population

The proposed Flood Protection Bund near Zain-ul-Abideen Khoso Drain is expected to improve downstream flood management by reducing flood inundation frequency, controlling overbank flow, and enhancing protection of nearby settlements, agricultural lands, road infrastructure, and irrigation facilities. The improved flood regulation capacity is anticipated to strengthen overall flood resilience and reduce socio-economic vulnerabilities within the protected area.

Despite these benefits, the intervention may result in localized hydrological and geomorphological changes, including minor alterations in flow distribution patterns, sediment transport processes, and changes in localized drainage behaviour. During extreme flood conditions, residual risks may remain in the form of localized flow concentration, increased velocities, erosion, or temporary rise in downstream water levels in the event of overtopping or structural damage; however, these risks have been addressed through appropriate hydraulic design measures, strengthened embankment sections, slope protection works, and erosion control provisions.

During construction, temporary impacts may include increased turbidity, sediment generation, temporary restriction of access, localized disturbances associated with earthworks, and short-term impacts on nearby water resources. These impacts are expected to be temporary and manageable through implementation of ESMP measures including sediment control, regulated construction activities, spoil management, environmental monitoring, and stakeholder engagement.

Overall, the subproject is expected to generate positive environmental and social outcomes by improving flood protection, reducing downstream flood risks, protecting agricultural and community assets, and enhancing resilience of the Zain-ul-Abideen Khoso Flood Protection Scheme while ensuring compliance with environmental and social safeguard requirements through effective ESMP implementation.

Table 6-7: Downstream and Upstream Population of the sub project area.

| Village Name                   | Number of Households in Village | Total Population | Distance from the subproject Area |
|--------------------------------|---------------------------------|------------------|-----------------------------------|
| <b>Downstream</b>              |                                 |                  |                                   |
| Dur Abad                       | 50                              | 370              | 0.5 km                            |
| Zain-ul-Abdeen                 | 70                              | 500              | 0.5 km                            |
| Got Muhammad Mukheri           | 20                              | 250              | 1 km                              |
| Total Household and Population | 140                             | 1120             |                                   |

### 6.5.2.6 Mitigation Measures for Downstream Impacts

#### 6.5.2.6.1 Hydraulic and Structural Measures

The proposed Flood Protection Bund around Village Zain ul Abideen Khan Khoso has been developed as a combined flood protection and drainage intervention under the Hairdin Main Drain Restoration Subproject to improve flood conveyance, maintain drainage performance, and reduce inundation risks affecting the village and adjoining agricultural lands. The intervention covers approximately 2,250 m and has been designed to safely convey flood runoff and surplus water with a design discharge capacity of 4.80 cumecs.

The proposed drainage section comprises a depth of 2.80 m, bottom width of 2.80 m, side slopes of 1.5H:1V, berm height of 1.50 m, berm width of 4.0 m, and a longitudinal bed slope of 0.000254 m/m, selected to maintain hydraulic stability, drainage efficiency, and adequate flood conveyance capacity.

During construction activities including channel re-sectioning, embankment rehabilitation, berm raising, excavation, and installation of protection works, temporary downstream impacts may occur in the form of localized flow disturbance, temporary ponding, restricted runoff evacuation, sediment movement, and short-term reduction in drainage efficiency. If unmanaged, these conditions may contribute to localized flooding, water accumulation, and temporary impacts on downstream agricultural lands.

To minimize these impacts, construction activities shall be undertaken in phases to maintain hydraulic continuity and uninterrupted drainage performance. Hydraulic and geotechnical measures shall include embankment stability assessment, provision of adequate freeboard, berm strengthening, slope stabilization, seepage control, and erosion protection measures. Structural protection works including stone pitching, gabion aprons, toe protection works, and localized scour control arrangements shall be implemented to reduce erosion, dissipate hydraulic energy, and improve structural resilience during high-flow conditions.

Existing drainage routes and natural runoff paths shall be maintained throughout implementation to avoid backwater effects, localized flooding, interruption of surplus water disposal, and additional waterlogging conditions.

#### **6.5.2.6.2 Sediment and Water Quality Management**

Sediment management measures shall be implemented during channel restoration, embankment strengthening, earthworks, berm raising activities, and installation of protection works to minimize temporary downstream impacts and maintain water quality conditions within the flood protection and drainage corridor.

Temporary sediment control facilities including silt barriers, sediment traps, spoil containment areas, controlled runoff channels, and localized settling arrangements shall be established where required to prevent migration of excavated material into active drainage sections and adjoining agricultural lands.

Construction activities involving excavation and earthworks within the active channel alignment shall preferably be undertaken during relatively low-flow periods to minimize sediment transport, turbidity generation, and temporary disturbance of drainage performance. Excavated materials and spoil shall be stored outside active flow zones to avoid blockage of runoff conveyance and reduction in hydraulic capacity.

Proper handling, storage, and disposal procedures for fuels, lubricants, construction materials, wastewater, and solid waste shall be implemented to prevent contamination of drainage flows, floodwater, agricultural fields, and nearby water resources.

Implementation of these measures shall reduce sediment-related impacts and maintain downstream water quality while supporting long-term operation of the combined flood protection and drainage system.

#### **6.5.2.6.3 Flow Regulation and Flood Risk Management**

Construction activities shall be phased carefully to maintain continuous flood conveyance and drainage performance within the existing system and avoid temporary obstruction of stormwater and surplus flow evacuation, particularly during monsoon periods and peak runoff conditions.

Temporary diversions, staged embankment rehabilitation, controlled excavation procedures, and section-wise construction sequencing shall be adopted where necessary to maintain hydraulic

continuity and avoid localized flooding or interruption of drainage functions. Construction activities within active flow sections shall be minimized during periods of elevated flood risk.

An emergency preparedness and response framework shall be established to manage potential events including temporary flow obstruction, overtopping risks, excessive runoff accumulation, localized embankment erosion, scour development, drainage blockage, and structural damage to protection works.

Coordination shall be maintained with the District Administration, Irrigation Department field staff, and local communities for flood forecasting, warning dissemination, emergency response, and restoration of drainage performance during extreme rainfall and flood events.

Following implementation of mitigation measures, residual downstream impacts are expected to remain low, localized, temporary, and manageable, while long-term project impacts are anticipated to be beneficial through improved flood protection, enhanced drainage efficiency, reduced waterlogging, and protection of Village Zain ul Abideen Khan Khoso and adjacent agricultural lands against recurrent flooding.

#### **6.5.2.6.4 Community Health and Safety Measures**

Construction activities will be planned to maintain safe access to nearby settlements, agricultural areas, irrigation paths, and local transportation routes. Safety provisions including warning signage, barricading, restricted work zones, traffic control measures, and controlled access arrangements will be implemented at active construction sites. Occupational health and safety requirements including use of PPE, emergency response arrangements, and worker awareness programs will be enforced throughout implementation. A Grievance Redress Mechanism (GRM) will remain operational during the project period to address community concerns and complaints in a transparent manner.

#### **6.5.2.6.5 Environmental Monitoring and Compliance**

Environmental monitoring activities will be undertaken throughout project implementation to assess compliance with environmental safeguard requirements and ESMP commitments. Monitoring parameters will include turbidity, suspended sediments, drainage flow conditions, erosion status, dust levels, and noise conditions at construction locations. Periodic inspection and maintenance of structural components including stone pitching works, gabion protections, berm sections, and scour protection arrangements will be carried out to ensure long-term functionality and hydraulic performance of the drainage system. Monitoring outcomes shall be documented through regular environmental and social compliance reporting.

#### **6.5.2.6.6 Stakeholder Engagement and Awareness**

Continuous engagement with local communities, farmers, land users, and downstream beneficiaries will be maintained throughout project implementation. Information dissemination regarding construction activities, anticipated impacts, mitigation measures, drainage improvements, and flood risk reduction benefits will be carried out through consultations and awareness sessions. Community awareness programs will also support preparedness against future flood events and promote understanding regarding operation and maintenance requirements of the upgraded drainage infrastructure and associated flood protection measures.

#### **6.5.2.6.7 Labor Influx and Social Conflict**

Influx of non-local workers may lead to social tension if unmanaged.

**Impacts/Risks**

Community worker conflicts during construction.

**Mitigation Measures**

Potential social risks arising from the influx of non-local workers shall be managed through inclusive employment practices, clear behavioral standards, and proactive community engagement.

- **Preference for Local Labour Where Feasible**

The Contractor shall give priority to hiring local workers for both skilled and unskilled positions where such skills are available, in coordination with local authorities and community representatives. This approach will help reduce labour influx, promote local economic benefits, and minimize potential tensions between workers and host communities.

- **Enforcement of Worker Code of Conduct**

All project workers, including subcontractors and security personnel, shall be required to adhere to a Worker Code of Conduct that defines acceptable behaviour and explicitly prohibits harassment, intimidation, discrimination, substance abuse, and any form of gender-based violence. Workers shall receive orientation on the Code of Conduct upon engagement, and violations shall result in disciplinary action in accordance with project and legal requirements.

- **Appointment of a Community Liaison Officer**

The Contractor shall appoint a Community Liaison Officer (CLO) responsible for maintaining regular communication with affected communities. The CLO shall facilitate information sharing, address community concerns related to construction activities and worker behavior, and support conflict prevention by ensuring that community feedback is communicated promptly to site management.

- **Prompt Resolution of Grievances through the GRM**

Community concerns and complaints related to labor influx or worker behavior shall be registered and addressed promptly through the Project's Grievance Redress Mechanism. The GRM shall be accessible, transparent, and responsive, with clear procedures for submission, review, and resolution of grievances. Records of grievances and actions taken shall be maintained for monitoring and reporting purposes.

- **Monitoring and Oversight**

The Engineer shall monitor the effectiveness of labour influx management measures and ensure that corrective actions are implemented where community-worker conflicts are identified or anticipated.

**6.5.2.6.8 Adverse Downstream Failure Scenario Analysis****A. Statement of Risk**

Despite the application of climate-resilient design standards and enhanced flood protection measures under the SSP2-4.5 climate scenario, a residual risk remains. The Zain ul Abideen Khan Khoso Flood Protection Bund has been designed to protect nearby settlements, agricultural lands, and public infrastructure from seasonal flood flows originating from upstream catchments. During an extreme rainfall event exceeding the design capacity of the flood protection bund, or in the event of a sudden and intense cloudburst within the upstream catchment, localized overtopping, embankment erosion, slope failure, or partial breach of the flood protection bund may occur, potentially resulting in inundation of downstream settlements and agricultural lands.

The project area lies within the flood-prone plains of District Sohbatpur where seasonal flood flows and runoff may accumulate rapidly during monsoon events. If partially completed embankment sections, temporary construction works, stockpiled materials, or excavation areas remain exposed during major rainfall events, the risk of localized flooding and rapid inundation of nearby communities may increase significantly.

Based on the baseline assessment presented in Section 4.4.5, the following villages are identified as being at potential risk in a worst-case flood protection bund failure scenario due to their proximity to the project area and relatively low ground elevations. Table 6-8 below summarizes the at-risk villages, their distance from the subproject area, estimated population at risk, and primary risk category. A detailed flood inundation mapping study shall be completed by the Contractor prior to construction as part of the Emergency Action Plan required under this ESMP.

Table 6-8: At-Risk Villages in Flood Protection Bund Failure Scenario

| Village Name         | Distance from Subproject Area | Estimated Population at Risk | Primary Risk Category                         |
|----------------------|-------------------------------|------------------------------|-----------------------------------------------|
| Dur Abad             | 0.5 km                        | 370                          | Flood inundation / Agricultural land flooding |
| Zain-ul-Abdeen       | 0.5 km                        | 500                          | Rapid inundation / Property damage            |
| Got Muhammad Mukheri | 1 km                          | 250                          | Localized flooding / Access disruption        |
| <b>Total</b>         | -                             | <b>1,120</b>                 | -                                             |

## B. Risk Management Strategy

The project adopts a three-layered approach to manage this residual downstream failure risk.

- **Layer 1 (Preventive):** Design and construction measures aimed at minimizing the probability of bund overtopping, erosion, scour, or embankment failure. This includes climate-informed hydraulic design, embankment strengthening, stone pitching, gabion apron protection, and monsoon season construction controls.
- **Layer 2 (Early Warning):** Detection and alert systems to identify rising flood levels and provide advance warning to at-risk communities.
- **Layer 3 (Emergency Response):** Preparedness and evacuation measures to enable communities to respond effectively if overtopping, embankment erosion, or localized bund failure occurs.

## C. Specific Mitigation Measures

The Contractor, under the supervision of the Construction Supervision Consultant and the Project Implementation Unit, shall implement the following measures to address the downstream failure risk.

### 1. Restriction of Construction during Monsoon Season

Major excavation, filling, embankment reconstruction, stone pitching, and gabion apron works shall not be carried out on exposed embankment sections during the active monsoon season, defined as July 15 to September 15 of each year. This restriction is based on the rationale that this period carries the highest risk of flood flows from upstream catchments and incomplete embankment sections are more vulnerable to erosion, overtopping, and localized failure.

Construction during this period shall be limited to off-site fabrication works, camp maintenance, material preparation, and other activities outside active flood-prone areas. The Contractor shall include the monsoon shutdown period in the main construction schedule and the CSC shall be responsible for enforcing this restriction.

## 2. Installation of Hydrological Early Warning System

The Contractor shall install and maintain a minimum of two water level gauges at critical locations near the flood protection bund as described in Table 6-9 below.

Table 6-9: Water Level Gauge Locations and Specifications

| Gauge Designation               | Location                                                               | Purpose                                                       | Monitoring Responsibility |
|---------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------|
| Gauge 1 (Upstream Trigger)      | Upstream flood approach area near the flood protection bund            | Detect rising flood levels approaching the bund               | CSC Safety Officer        |
| Gauge 2 (Bund Monitoring Gauge) | Critical reach of the Zain ul Abideen Khan Khoso Flood Protection Bund | Monitor water levels adjacent to the bund during flood events | CSC Safety Officer        |

Pre-defined trigger levels shall be established in coordination with the Irrigation Department and Pakistan Meteorological Department (PMD), based on design flood levels and available freeboard.

Table 6-10: Trigger Levels and Required Emergency Actions

| Trigger Level            | Water Level Condition                                                                                      | Required Actions                                                                                                                                     |
|--------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alert Level              | Water level reaches 0.5 m below available freeboard level                                                  | CSC and Contractor notified; inspections increased to twice daily; emergency equipment mobilized and standby arrangements activated                  |
| Evacuation Trigger Level | Water level reaches 75% of available freeboard and rainfall exceeds 15 mm in 1 hour (or 25 mm in 24 hours) | Construction activities suspended; CSC notifies PIU and District Administration; Emergency Action Plan activated; community warning systems deployed |

The Contractor shall install the gauges. The CSC Safety Officer shall monitor water levels daily during the monsoon season and immediately upon any flood warning issued by PMD.

## 3. Emergency Action Plan with Inundation Mapping and Community Alerts

A site-specific Emergency Action Plan (EAP) shall be prepared by the Contractor and approved by the CSC and PIU prior to commencement of major earthworks. The EAP shall be appended to the Contingency and Emergency Response Plan provided in **Annexure-R**.

Table 6-11: Required Components of the Emergency Action Plan

| Component              | Description                                                                                                                                       | Responsible Party                        |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| Inundation Mapping     | Flood inundation model for worst-case bund failure or overtopping scenario showing flood extent, arrival times, safe zones, and evacuation routes | Contractor to prepare; CSC to approve    |
| Community Alert System | Sirens, loudspeakers, and designated community focal persons for dissemination of warnings                                                        | Contractor to install; PIU to coordinate |

| Component        | Description                                                                                                 | Responsible Party                    |
|------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Alert Protocol   | Emergency instructions in Urdu, Balochi, and Sindhi explaining evacuation procedures and safety precautions | Contractor to prepare and distribute |
| Evacuation Drill | Full-scale emergency evacuation drill before commencement of first monsoon season after mobilization        | Contractor to conduct; CSC to verify |

A full-scale emergency evacuation drill shall be conducted before the first monsoon season following contractor mobilization. The drill shall involve representatives from the at-risk villages, district administration, and the Contractor's emergency response team.

The Contractor shall prepare the Emergency Action Plan and conduct the drills. The CSC shall verify community training and preparedness while the PIU shall coordinate with district authorities.

#### D. Residual Risk

Following the full implementation of the preventive measures described in subsection B, the early warning measures described in subsection C2, and the emergency response measures described in subsection C3, the residual risk to downstream communities resulting from bund overtopping or localized embankment failure is reduced from High to Low-Medium.

Table 6-12: Residual Risk Assessment after Mitigation

| Risk Layer             | Mitigation Measure                                                                            | Risk Reduction Achieved |
|------------------------|-----------------------------------------------------------------------------------------------|-------------------------|
| Preventive             | Climate-informed flood protection bund design with stone pitching and gabion apron protection | High                    |
| Preventive             | Monsoon construction restriction and protection of incomplete embankment sections             | Medium                  |
| Early Warning          | Water level monitoring with pre-defined trigger levels                                        | High                    |
| Early Warning          | Daily monitoring during monsoon season and coordination with PMD                              | Medium                  |
| Emergency Response     | Inundation mapping and evacuation route identification                                        | High                    |
| Emergency Response     | Community alert system and annual evacuation drills                                           | High                    |
| Combined Residual Risk | All measures fully implemented                                                                | Low-Medium (Acceptable) |

This residual risk is considered acceptable for a climate-adaptation flood protection project of this nature, provided that the Early Warning System and Emergency Action Plan remain functional and are tested annually.

#### E. Monitoring and Reporting

The Construction Supervision Consultant shall include a specific section in the Monthly ESMP Compliance Report on the status of the Early Warning System, including gauge readings, communication equipment functionality, and emergency preparedness measures.

Any activation of the Alert Level or Evacuation Trigger Level shall be reported to the Project Implementation Unit within twenty-four hours. The annual evacuation drill report shall be submitted as part of the Project Annual Environmental and Social Progress Report.

Table 6-13: Monitoring and Reporting Requirements for Downstream Failure Risk

| Monitoring Activity                                                         | Frequency                                       | Responsible Party                | Reporting Requirement                                                                    |
|-----------------------------------------------------------------------------|-------------------------------------------------|----------------------------------|------------------------------------------------------------------------------------------|
| Early Warning System status check (gauges, sirens, communication equipment) | Weekly during monsoon season; monthly otherwise | CSC Safety Officer               | Included in Monthly ESMP Compliance Report                                               |
| Alert Level or Evacuation Trigger Level activation                          | As occurs                                       | CSC Safety Officer               | Report to PIU within 24 hours                                                            |
| Emergency evacuation drill                                                  | Annually before monsoon season                  | Contractor with CSC verification | Drill report submitted to PIU as part of Annual Environmental and Social Progress Report |

#### 6.5.2.6.9 GBV / SEA / SH Risks

Labor influx may increase the risk of Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH) incidents. GBV & SEA guidelines attached in **Annexure-J** to be followed by the contractor. In general, presently the prevalence of SEA/SH doesn't exist in the area but due to the influx of local and non-local labor and during the peak of construction activities under all packages, there may be a risk of gender-based violence or sexual exploitation and abuse among women and children and other vulnerable population groups (poor women, single women living alone, elderly, infirm or ill, orphans, etc). The project Grievance Redressal Mechanism (GRM) has a mandate to cover the aspects of SEA/SH in the area if occurred during the construction period. This can contribute to enduring physical and mental harm, while undercutting the ability of survivors, and often their families, to engage in meaningful, productive lives.

#### Impacts / Risks

Potential SEA/SH incidents during construction.

#### Mitigation Measures

Risks related to GBV, SEA, and SH associated with labour influx shall be managed through preventive, responsive, and enforcement-based measures.

- **Enforcement of GBV-Inclusive Codes of Conduct**

All project workers, including contractors, subcontractors, and security personnel, shall be required to sign and comply with a GBV-inclusive Code of Conduct. The Code shall clearly prohibit all forms of GBV, SEA, and SH, define unacceptable behaviours, and outline disciplinary actions for violations. The Code of Conduct shall be communicated in languages understood by workers and communities and enforced consistently throughout the construction period.

- **Mandatory Worker Training**

All workers shall receive mandatory induction and refresher training on GBV, SEA, and SH risks prior to deployment and periodically during construction. Training shall cover expected standards of behaviour, consequences of violations, respectful engagement with communities, and awareness of reporting mechanisms. Training records shall be maintained as part of project compliance documentation.

- **Establishment of Confidential Reporting Mechanisms**

The Project shall establish safe, confidential, and survivor-centered reporting mechanisms for GBV, SEA, and SH incidents. Reporting channels may include designated focal persons, hotlines, or confidential complaint boxes, ensuring privacy and protection from

retaliation. Information on reporting options shall be widely disseminated to workers and affected communities.

- **Referral to Support Services**

Survivors of GBV, SEA, or SH incidents shall be referred promptly to appropriate support services, including medical care, psychosocial counselling, legal assistance, and protection services, in coordination with local service providers. Referrals shall respect survivor consent, confidentiality, and dignity, in line with World Bank good practice.

- **Zero-Tolerance Enforcement**

A zero-tolerance approach shall be applied to any confirmed incidents of GBV, SEA, or SH. Disciplinary measures, including suspension, termination of employment, or referral to authorities, shall be enforced in accordance with national law and contractual provisions. Failure by the Contractor to implement GBV risk mitigation measures shall be treated as a contractual non-compliance.

- **Monitoring and Compliance**

Implementation of GBV risk mitigation measures shall be regularly monitored by the Contractor and supervising Engineer. Records of training, Code of Conduct compliance, and grievance handling (without compromising confidentiality) shall be maintained and reviewed to ensure effectiveness.

Table 6-14: Gender-based violence or sexual exploitation and abuse

| Nature | Duration   | Reversibility | Likelihood | Consequence | Impact Significance |
|--------|------------|---------------|------------|-------------|---------------------|
| Direct | Short term | Reversible    | Likely     | Moderate    | Medium adverse      |

## Mitigation

- Adequate training to especially for migrant workers will be provided on the cultural norms of the local community.
- The project GRM has already mandated to uptake SEA/SH related grievances of the project, and its other related issues.
- Priority will be given to mitigate the risk of gender-based violence, sexual exploitation, and abuse.
- Appropriate transportation for vulnerable groups.
- The Contractor shall ensure that a code of conduct is developed for all staff and labor describing acceptable and prohibited behaviors (guidelines are given below):
- Inequality, discrimination, and marginalization, including on the basis of gender and or vulnerability, is avoided.
- Labor and or other staff engaged by the contractor are educated and made aware of the civil, social, and legal rights of women and vulnerable groups (poor women, single women living alone, elderly, infirm or ill, orphans), and about the action that can be taken in the event of GBV and SEA. Community members including poor women, single women living alone, elderly, infirm or ill, orphans should be made aware of the risks of GBV and SEA and redress measures, including case management support, health services, psychosocial support, police support and security, access to legal services, and shelter, if needed.
- Strive to reduce at-risk groups' exposure to GBV and SEA violence.
- Respect for human rights, gender balance, eradication of child and bonded labor

- Promotion of social dialogue among the stakeholders
- The contractor will be required to provide workers with documented information about the norms and local culture to be followed
- Culturally appropriate consultation mechanisms are followed by the contractor

To achieve the above-mentioned mitigation measures and guidelines, training will be organized and conducted on GBV and SEA at the field level.<sup>1</sup> These trainings will be organized for the contractor and CSC staff, and it will be the responsibility of the Contractor. The contractor will hire services of a qualified professional Resource Person of GBV & SEA from the open market and an agreement will be signed between the contractor and Resource Person, under the supervision of PIU and CSC. At the end of each training, the Resource Person will produce a training report and other relevant material, submit to the concerned section of CSC with a cumulative report to PIU. This process will complete under the overall supervision and monitoring of the Social Safeguard Specialist and Gender Specialist of PIU and M&E consultants, as mentioned in table 7.1

The bidders will be required to submit Codes of Conduct of acceptable and prohibited behaviors with their bids. The CoCs will set clear boundaries for acceptable and unacceptable behaviors of all individuals and companies and will be signed by companies, managers, and individuals.

- Construction Contractor will specify respect for the local community and its cultural norms;
- Presentation of professional behavior and integrity when dealing with the local community;
- Discrimination is prohibited such as gender, age, ethnic or national origin, religion, disability, sexual orientation;
- Respect privacy, particularly among women;
- CoCs will specify sanctions, including for any incidents of SEA;
- The CoC will include specific prohibitions against SEA with children defined as anyone younger than 18 and commensurate sanctions;
- The contractor will be required to establish anti-sexual harassment policies that govern conduct in the workplace;
- The contractor's contract will include provisions for mandatory reporting of SEA incidents - links to GRM;
- The Contractor will demonstrate that they have the capacity to manage SEA risks, including SEA prevention and response action plan/s and key staff with appropriate experience;
- The contractor will be required to provide mandatory and repeated training to workers on sexual exploitation and abuse, and HIV/AIDS prevention and on the content and obligations derived from the code of conduct;
- Inappropriate behavior such as sexual harassment, gender-based violence, and sexual abuse is strongly prohibited;
- Zero tolerance for any form of harassment, bullying, or other offensive physical or verbal treatments.

### Residual Impact

Following the implementation of these mitigation measures, the impact shall reduce to low adverse in the short term, reducing to neutral following completion of the works.

<sup>1</sup> Gender-based violence (GBV) (with reference to WB Note on GBV available at: <http://pubdocs.worldbank.org/en/399881538336159607/Good-Practice-Note-Addressing-Gender-Based-Violence.pdf>)

| Activity                                                             | Impact                                                                                              | Duration                                             | Affected Users                                                 |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------|
| Excavation, filling and embankment formation                         | Temporary increase in sediment runoff, localized ponding, and disturbance to natural drainage paths | 2 to 5 days per construction reach                   | Farmers and residents adjacent to the flood protection bund    |
| Temporary diversion of surface runoff during embankment construction | Localized water accumulation, temporary restriction of drainage flow, and short-term flooding risk  | 1 to 3 days per diversion location                   | Downstream farmers and nearby communities                      |
| Stockpiling of excavation and fill material                          | Localized obstruction of surface runoff paths and temporary reduction in drainage capacity          | Duration of stockpile placement (typically 3–7 days) | Landowners and agricultural fields adjacent to stockpile areas |
| Stone pitching and gabion apron works                                | Temporary disturbance to local drainage patterns and restricted access near active work areas       | 2 to 4 days per work location                        | Nearby residents, farmers, and maintenance access users        |
| Movement of construction machinery and equipment                     | Temporary obstruction of drainage routes and localized soil compaction affecting runoff             | Throughout active construction period                | Adjacent landowners and local communities                      |
| Embankment compaction and slope shaping works                        | Temporary restriction of access and localized surface runoff diversion                              | 1 to 3 days per construction reach                   | Farmers, livestock owners, and nearby residents                |

#### 6.5.2.6.10 Water Rights and User Conflicts

##### A. Risk Assessment

The reconstruction of the Zain ul Abideen Khan Khoso Flood Protection Bund is intended to improve flood protection and enhance resilience against seasonal flood events. The project does not involve abstraction, diversion, storage, or reallocation of irrigation water resources, nor does it alter existing water rights, irrigation allocations, or command area boundaries. Therefore, no permanent water rights conflicts are anticipated among farmers, communities, or other water users within the project influence area.

However, temporary construction activities may cause localized disruptions and grievances that, if not properly managed, could lead to disputes among nearby landowners, farmers, and communities. Such issues may arise due to temporary drainage restrictions, localized ponding, construction traffic, stockpiling of materials, or obstruction of existing runoff paths. Table 6-15 below summarizes the potential temporary impacts on water users.

Table 6-15: Temporary Construction Impacts on Water Users

| Activity                                                             | Impact                                                                                              | Duration                                             | Affected Users                                                 |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------|
| Excavation, filling and embankment formation                         | Temporary increase in sediment runoff, localized ponding, and disturbance to natural drainage paths | 2 to 5 days per construction reach                   | Farmers and residents adjacent to the flood protection bund    |
| Temporary diversion of surface runoff during embankment construction | Localized water accumulation, temporary restriction of drainage flow, and short-term flooding risk  | 1 to 3 days per diversion location                   | Downstream farmers and nearby communities                      |
| Stockpiling of excavation and fill material                          | Localized obstruction of surface runoff paths and temporary reduction in drainage capacity          | Duration of stockpile placement (typically 3–7 days) | Landowners and agricultural fields adjacent to stockpile areas |
| Stone pitching and gabion apron works                                | Temporary disturbance to local drainage patterns and restricted access near active work areas       | 2 to 4 days per work location                        | Nearby residents, farmers, and maintenance access users        |

## B. Mitigation Measures

The Contractor shall implement the following measures to prevent, mitigate, and resolve water-related conflicts that may arise during construction activities.

### 1. Advance Notice to Affected Communities and Landowners

- For activities that may temporarily affect drainage routes, access, or runoff patterns, the Contractor shall provide a minimum of 7 calendar days written notice at village mosques, public gathering places, and Union Council offices within the affected area.
- The notice shall be provided in Urdu, Balochi, and Sindhi and shall include:
  - Location and nature of construction activity.
  - Expected duration of the activity.
  - Potential impacts on drainage, access, or agricultural activities.
  - Contact information of the Contractor's Community Liaison Officer.
  - Grievance submission procedures.
- For short-duration activities causing minor disruptions, a minimum of 3 calendar days verbal notice shall be provided through village elders and community representatives.

### 2. Grievance Redress Mechanism (GRM) Prioritization

- All complaints related to drainage obstruction, localized flooding, access restrictions, or construction-related water issues shall be treated as high-priority grievances under the Project's Grievance Redress Mechanism (GRM).
- Acknowledgment: Complaints shall be acknowledged within 24 hours of receipt.
- Resolution: Routine complaints shall be investigated and resolved within 3 working days.
- Emergency complaints involving flooding, waterlogging, or significant drainage obstruction shall be acknowledged within 2 hours and corrective action initiated within 12 hours.

**3. Construction Timing Restrictions**

- Major earthworks that may temporarily obstruct drainage routes shall, where practicable, be scheduled outside periods of forecast heavy rainfall.
- Temporary drainage interruptions shall be minimized during the monsoon season.
- Construction sequencing shall ensure that existing drainage paths remain functional throughout the construction period.

**4. Community Coordination Committee**

A Community Coordination Committee shall be established prior to commencement of construction activities that may affect local drainage conditions.

| Member                           | Role        |
|----------------------------------|-------------|
| SDO Irrigation Sohbatpur         | Chairperson |
| Contractor's Project Manager     | Member      |
| CSC Environmental/Social Officer | Member      |
| Two Community Representatives    | Members     |
| Community Liaison Officer        | Secretary   |

The Committee shall:

- Review construction schedules and potential community impacts.
- Meet whenever significant temporary drainage restrictions are proposed.
- Review grievances escalated through the GRM.
- Recommend corrective actions where necessary.

**5. Temporary Drainage Management Measures**

During construction activities, the Contractor shall implement the following measures:

- Maintain temporary drainage channels to convey runoff safely around active work areas.
- Prevent blockage of natural drainage routes through proper construction sequencing.
- Remove stockpiled materials from drainage paths.
- Install temporary erosion and sediment control measures where necessary.
- Inform nearby residents and farmers of activities that may temporarily affect drainage conditions.

**C. Residual Risk**

Following implementation of the above measures, the residual risk of water-related conflicts is assessed as Low. No significant adverse impacts on water rights, irrigation allocations, or permanent disputes between user groups are anticipated. The Community Coordination Committee and prioritized Grievance Redress Mechanism (GRM) shall remain operational throughout the construction period to address any unanticipated issues promptly and effectively.

**6.5.2.6.11 Cultural and Community Impacts**

Construction activities may temporarily disrupt local routines and cultural practices.

**Impacts / Risks**

Temporary disturbance to daily life and social norms.

**Mitigation Measures**

Temporary social disturbances arising from construction activities shall be managed through early engagement, adaptive work planning, and culturally appropriate conduct.

- **Conduct Community Consultations**

The Contractor, in coordination with the Client and local authorities, shall conduct regular and meaningful consultations with affected communities prior to and during construction. Consultations shall inform communities about planned activities, timelines, and potential temporary disruptions, and shall provide opportunities for community members to raise concerns and suggest mitigation measures. Feedback from consultations shall be documented and incorporated into construction planning where feasible.

- **Scheduling of Works to Avoid Sensitive Times**

Construction activities shall be scheduled to avoid sensitive periods, including religious events, cultural ceremonies, market days, harvest seasons, and community gatherings, to the extent practicable. Where avoidance is not possible, advance notice shall be provided to affected communities, and work hours shall be adjusted to minimize disruption to daily routines.

- **Respect for Local Customs and Traditions**

All project workers shall be required to respect local customs, traditions, and social norms. Cultural awareness shall be included in worker induction training, emphasizing appropriate behavior, dress codes, interaction with community members, and respect for religious and cultural sites. Any culturally sensitive issues raised by the community shall be addressed promptly through the Community Liaison Officer or GRM.

- **Monitoring and Adaptive Management**

The effectiveness of social disturbance mitigation measures shall be monitored through community feedback, consultations, and the Grievance Redress Mechanism. Construction practices shall be adjusted as needed to address concerns and minimize social disruption.

### **Residual Impacts**

With full implementation of the above mitigation measures, residual environmental and social impacts are expected to be low, localized, reversible, and manageable, while the Subproject will deliver long-term benefits in flood protection, agricultural productivity, and community resilience.

#### **6.5.2.6.12 Archaeological and Cultural Heritage Site**

As per the initial screening and assessment, no archaeological or cultural heritage sites have been identified within the proposed subproject area of the Zain ul Abideen Khan Khoso Flood Protection Bund in District Sohbatpur. However, in the event of any accidental discovery of unidentified archaeological, historical, or cultural heritage resources during project activities, the Chance Find Procedure (as provided in **Annexure-D**) shall be strictly implemented.

Upon discovery of any archaeological or cultural heritage resource, the Contractor shall immediately suspend all construction activities within the affected area and secure the site to prevent disturbance or damage. The Contractor shall promptly notify the Supervisory Consultant and the Project Management Unit (PMU) of the discovery. A brief report, including photographs, coordinates, and a layout plan indicating the exact location and nature of the find, shall be prepared and submitted to the Supervisory Consultant, with a copy provided to the PMU for further action.

In the event that any archaeological, historical, or cultural heritage resource is confirmed, an appropriate Cultural Heritage Management Plan (CHMP) shall be prepared in consultation with the relevant authorities. All subsequent activities shall be undertaken in accordance with

applicable regulatory requirements, approved procedures, and the provisions of the Chance Find Procedure to ensure protection and preservation of the discovered resource.

#### **6.5.2.7 Physical Resettlement**

Based on the current design and scope, the proposed Zain ul Abideen Khan Khoso Flood Protection Works will be implemented along the existing alignment, with no deviation from the original design. Therefore, no physical resettlement is anticipated, and no residential or commercial structures will be affected.

#### **6.5.2.8 Land Acquisition**

The proposed Flood Protection Works will be implemented entirely within the existing alignment of the Kachhi Plain river basin. As such, there is no requirement for permanent land acquisition at this stage of the project.

However, during consultations with local stakeholders, the possibility of any unforeseen land needs was discussed. In such cases, the Voluntary Land Donation (VLD) process aligned with WB's Safeguard Policy Statement and national guidelines was clearly explained to the community. This includes procedures for documentation, verification of voluntary consent, and ensuring that no vulnerable persons are adversely affected.

- The ownership of the land and evidence indicating the voluntary nature of the donation
- The appropriateness of the donation for the intended purpose
- The economic status of the donor that he/she is above the poverty line or whose remaining holdings are economically viable
- No encumbrances on the land
- No negative livelihood impact on any vulnerable groups
- No compensation to be paid, and
- That the owner gives up all claims on the land and the title will be transferred to the recipient through procedure prescribed by the law of the state.

At present, no private land acquisition is anticipated, and all construction activities are expected to remain within the designated right-of-way.

##### **6.5.2.8.1 Social and Cultural Impacts**

The proposed Subproject is anticipated to contribute positively to the socio-economic fabric of the region, particularly due to its strategic location near the border of Balochistan province. By stimulating local employment opportunities and enhancing connectivity, the project is likely to catalyse ancillary economic activities such as small-scale trade, transport services, and hospitality support for the workforce. These benefits, while indirect, are expected to uplift the livelihoods of nearby communities over time.

However, during the construction phase, certain temporary and localized social and cultural impacts may arise, primarily due to the interaction between local residents and incoming labourers (workforce). These impacts include:

- **Cultural Sensitivity and Lifestyle Shifts:** The presence of non-local workers may introduce different customs, languages, and social behaviours, which could lead to misunderstandings or discomfort among local populations, particularly in conservative or close-knit communities.

- **Potential for Social Tensions:** In rare cases, disputes may emerge due to differences in work ethics, communication barriers, or perceived inequities in employment opportunities. These tensions, if not managed proactively, could affect community cohesion.
- **Pressure on Local Resources:** A temporary increase in population may place additional demand on local water sources, sanitation facilities, and communal infrastructure, especially in smaller or resource-constrained settlements.

Despite these considerations, the overall magnitude of social and cultural impacts is assessed as minor and reversible, given the short-term nature of construction activities and the limited scale of workforce influx. These impacts are not expected to result in any long-term adverse effects on the local cultural identity or social structure.

### Mitigation Measures

Although no significant mitigation is deemed necessary, the following good practice measures are recommended to pre-emptively address potential concerns and foster positive community relations:

- **Cultural Orientation for Workers:** Contractors shall provide basic orientation sessions to all incoming workers on local customs, traditions, and community expectations to promote mutual respect and minimize cultural friction and relevant training as mentioned in section-6
- **Code of Conduct:** A clear and enforceable Code of Conduct shall be implemented for all site personnel, emphasizing respectful behaviour, prohibition of harassment, and obedience to local norms.
- **Grievance Redress Mechanism (GRM):** the project GRM/LGRC shall be displayed to allow community members to voice concerns or complaints related to social interactions or workforce behaviour.
- **Community Engagement:** Regular consultations and information-sharing sessions with local stakeholders shall be conducted to maintain transparency, trust, and ensure that any emerging issues are addressed on time.

7

# ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

## 7 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The Environmental and Social Management Plan (ESMP) defines the arrangements, procedures, and monitoring requirements for managing environmental and social risks and impacts associated with the rehabilitation/reconstruction of flood-damaged infrastructure under the Sub-project. The ESMP translates the mitigation measures identified in Section 6 (Environmental and Social Impacts and Mitigation Measures) into **implementable actions**, including (i) institutional roles and responsibilities, (ii) monitoring and reporting requirements, (iii) grievance redressal mechanisms, and (iv) contractor obligations and budget provisions.

The ESMP ensures that the Subproject is implemented in accordance with applicable national environmental regulations, the project ESMF and site-specific instruments, and relevant international standards including the World Bank Environmental and Social Framework (ESF). Through strict implementation and supervision, the ESMP supports resilient recovery by minimizing adverse impacts, protecting workers and communities, and enhancing long-term sustainability of flood protection assets.

### 7.1 INSTITUTIONAL ARRANGEMENTS FOR E&S IMPLEMENTATION

The Subproject will be implemented through coordinated arrangements at the Federal and Provincial levels, consistent with the overall IFRAP institutional setup. Environmental and social (E&S) implementation responsibilities will be embedded within existing project implementation structures to ensure effective oversight, timely reporting, and accountability.

#### 7.1.1 Federal Level (FPMU / MoPD&SI)

The Ministry of Planning, Development & Special Initiatives (MoPD&SI), through the Federal Project Management Unit (FPMU), will have overall responsibility for ensuring that the project is implemented in compliance with the ESMF and all site-specific E&S instruments, including this ESMP. An Environment and Social Management Unit (ESMU) may be established within the FPMU, staffed with designated E&S personnel/focal persons.

The ESMU will:

- Provide oversight and coordination for ESF compliance across provinces and components.
- Review consolidated E&S performance and incident reports and ensure timely escalation where required.
- Provide guidance, tools, and templates (e.g., monitoring checklists and reporting formats) for consistent field implementation.

#### 7.1.2 Provincial Level (PIU / Component-I)

The Provincial Project Implementation Unit (PIU) will be responsible for implementation of Component-I (Community Infrastructure Rehabilitation) and for ensuring effective implementation of the ESMP at the Subproject level. PIU will deploy E&S specialists and/or focal persons at district/field levels as required.

The PIU E&S team will:

- Supervise implementation of the ESMP and contractor obligations using approved monitoring checklists.
- Coordinate with CSC and Contractor to ensure corrective actions are implemented in a timely manner.

- Maintain liaison with FPMU/ESMU to ensure consistent ESF compliance, reporting, and incident management.

## **7.2 ROLES AND RESPONSIBILITIES OF ENTITIES INVOLVED IN E&S MANAGEMENT**

### **7.2.1 Project Implementation Unit (PIU)**

The PIU is responsible for oversight, quality assurance, and reporting of ESMP implementation. Specifically, PIU shall:

- Provide technical support, oversight, and quality control to field E&S focal persons and implementing teams.
- Review, approve, and maintain records of E&S screening checklists and site-specific ESMPs/updates, as applicable.
- Ensure all bidding documents, BOQs, and contracts include relevant ESMP requirements and applicable E&S clauses.
- Ensure that Subproject activities do not fall under the exclusion list and remain within the approved scope.
- Compile site monitoring information (from CSC and Contractor) and submit consolidated E&S progress reporting to FPMU and the World Bank as per reporting schedule.
- Track grievances and beneficiary feedback in accordance with the SEP (**Annexure-W**) and GRM procedures and use this as a monitoring tool for ESMP implementation.

#### **7.2.1.1 Serious Incident Notification:**

If the PIU/FPMU becomes aware of a serious incident associated with the Subproject that may have significant adverse impacts on the environment, communities, the public, or workers, the PIU/FPMU shall notify the World Bank within 48 hours of becoming aware and provide a subsequent detailed report and corrective actions within 30 days (or earlier as required).

#### **7.2.1.2 Completion and Site Restoration:**

At Subproject completion, PIU shall verify that all ESMP measures have been implemented, including restoration of work areas, camps, borrow areas, and disposal sites to at least pre-project conditions. Any pending issues shall be resolved before works are certified as complete and contracts are closed.

### **7.2.2 Construction Supervision Consultants (CSC)**

The CSC will provide day-to-day supervision and compliance verification of ESMP implementation and Contractor obligations. The CSC shall:

- Review the Contractor's Environmental & Social Management Plan (C-ESMP/CESMP) and confirm that it is consistent with the ESMP and contract requirements before construction begins.
- Supervise implementation of mitigation measures at all work sites and ancillary sites (borrow areas, camps, workshops, disposal sites, haul routes).
- Conduct routine inspections and verify compliance through checklists, photo records, and corrective action tracking.

- Require, verify, and monitor corrective actions in cases of non-compliance, and where necessary, prepare and submit corrective action plans for enforcement by the PIU.
- Submit monthly and quarterly E&S compliance monitoring reports to PIU in accordance with the reporting schedule.
- Notify PIU of serious incidents within 48 hours of awareness and support incident investigation and reporting.

*Note:* Internal audits may be conducted by the CSC at least once during the construction period (e.g., at 6 months) to evaluate compliance trends and recommend systemic improvements.

### **7.2.3 Construction Contractor (CC)**

The Contractor is primarily responsible for implementing all ESMP mitigation measures and preparing detailed site-specific plans as part of the Contractor's ESMP (C-ESMP/CESMP). The Contractor shall:

- Prepare and submit the C-ESMP prior to mobilization, including site layout plans and method statements addressing E&S risks.
- Prepare sub-plans (as applicable) including OHS Plan, Waste and Spoil Management Plan, Traffic and Construction Safety Management Plan, Camp Management Plan, Emergency Response Plan, Community Health and Safety Plan, Labor Management Plan, and GBV/SEA/SH prevention measures as required by the ESMP and contract.
- Select camps, yards, material storage areas, and waste disposal sites in accordance with ESMP siting requirements.
- Conduct E&S induction and periodic training (including toolbox talks) for workers and staff and maintain training records.
- Arrange baseline and periodic environmental monitoring (air, noise, water) as required, through qualified laboratories.
- Maintain records of incidents, non-compliance, corrective actions, grievances, and monitoring results and submit monthly reports to CSC and PIU.
- Ensure availability and proper use of PPE, safety signage, firefighting equipment, and spill response materials.

### **7.2.4 Contractor's Organizational Framework**

The Contractor shall designate qualified staff to manage ESHS compliance and reporting. At minimum, the Contractor shall appoint:

- Occupational Health and Safety Officer / Safety Supervisor
- Paramedic / First Aid Staff (as required by site risk profile)
- Environmental/Social Officer (or Environmental Engineer where required)
- Community Liaison Officer
- Gender Mobilizer (where relevant and as directed by the PIU.)

CVs and experience evidence shall be submitted to CSC for review prior to mobilization. The appointed staff must meet contract specifications and ESMP requirements.

## 7.2.5 Reporting and Documentation

### 7.2.5.1 Meetings

A pre-construction meeting will be held after contract award and prior to mobilization to confirm reporting formats, monitoring procedures, escalation protocols, and corrective action workflows. Participants shall include PIU Team, CSC and Contractor staff.

### 7.2.5.2 Communications

Routine site communications may be verbal; however, formal instructions related to ESMP compliance, corrective actions, or repeated non-compliance shall be issued in writing by CSC under the civil works contract and copied to PIU.

### 7.2.5.3 Reporting Frequency and Distribution

The Contractor and CSC shall produce monthly reports summarizing compliance status, non-compliances, corrective actions, and monitoring results. Where an independent M&E consultant is engaged, third-party monitoring reports shall also be submitted. The report distribution is provided in Table 7-1.

Table 7-1: Distribution of Periodic Reports

| S. No | Report                                                              | Prepared by                                     | Frequency | Reviewed by        | Distribution       |
|-------|---------------------------------------------------------------------|-------------------------------------------------|-----------|--------------------|--------------------|
| 1     | Monthly CSC Compliance Report (see report template in Appendix -E)  | CSC                                             | Monthly   | ES PIU             | PMU, Contractor    |
| 2     | Monthly Contractor's ES Mitigation and Management Compliance Report | Contractor's Environmental Coordinator/ Officer | Monthly   | ES CSC             | PIU & CSC          |
| 3     | Monthly M&E ESMP Monitoring Report                                  | M&E Consultant                                  | Monthly   | ES PIU             | ES PIU             |
| 4     | Quarterly ESMP Progress Report                                      | CSC                                             | Quarterly | PIU and World Bank | PIU and World Bank |

## 7.3 INCLUSION OF ESMP IN CONTRACT DOCUMENTS

The approved ESMP shall form part of the bidding/contract documents and shall be binding on the Contractor. ESMP requirements shall be reflected in technical specifications, BOQs, and contractual clauses to ensure adequate resources are allocated and that compliance is enforceable through contractual remedies.

Implementation shall be coordinated with the construction program so that mitigation measures are applied at the appropriate stage, supported by adequate staffing, equipment, and budget.

## 7.4 GRIEVANCE REDRESS MECHANISM (GRM)

An effective Grievance Redress Mechanism (GRM) is essential to ensure that concerns, complaints, and feedback from project-affected persons and other stakeholders are addressed in a timely, transparent, and fair manner. The Project has an established GRM under the overarching implementation arrangements, and the Subproject will adopt and follow the same GRM mechanism. The purpose of applying the Project GRM at Subproject level is to (i) provide an accessible channel for raising concerns, (ii) resolve issues early to avoid escalation and implementation delays, and (iii) strengthen accountability and community trust throughout implementation.

The GRM will be available to all stakeholders, including local communities, vulnerable households, women, and workers, and will be implemented in line with the Stakeholder Engagement Plan (SEP) and relevant requirements of the World Bank Environmental and Social Framework (including ESS2, ESS4 and ESS10). The GRM will operate alongside routine consultation and community liaison arrangements and will be publicized in local language(s) through culturally appropriate means.

#### **7.4.1 Proposed GRM (Project Mechanism to be followed)**

The Subproject will implement the Project GRM as already established under IFRAP. Complaints may be submitted through multiple channels, including in-person submission at designated project offices, through telephone/mobile contact, written applications, email, or through community representatives/focal persons where such arrangements exist under the Project. Information about grievance channels, submission requirements, expected timelines, and escalation options will be shared with communities prior to mobilization and during implementation, including special outreach for women and vulnerable groups.

#### **7.4.2 Receiving and Recording Grievances**

All grievances received under the Subproject will be recorded in a grievance log/register maintained by the PIU in accordance with the Project GRM procedures. Each complaint will be assigned a unique tracking number, and the following information will be recorded as applicable:

- Unique grievance tracking number
- Name and contact information of the complainant (unless anonymous)
- Date of submission
- Mode of submission (in-person/phone/email/written/through representative)
- Location of the issue (Subproject site/segment/settlement, as relevant)
- Description of the grievance and any supporting evidence
- Category/type of grievance (e.g., access, construction impacts, safety, labour, GBV, etc.)
- Action taken, responsible person/entity, and resolution status

The grievance register will be maintained systematically and will be available for review by relevant Project authorities and monitoring entities, consistent with confidentiality requirements (particularly for sensitive cases).

#### **7.4.3 Grievance Handling and Resolution Process**

Grievances will be addressed following the Project GRM timelines and steps, as summarized below:

##### **Stage 1: Acknowledgement and Logging**

Upon receipt, the grievance will be acknowledged and logged. Confirmation of receipt will be sent to the complainant within two working days (where contact information is available).

##### **Stage 2: Preliminary Review and Investigation**

A preliminary review and investigation will be carried out to determine the cause and appropriate corrective action. Where required, additional information may be sought from the complainant. The preliminary investigation will be completed within seven working days of

receipt, and an interim response will be communicated to the complainant describing the findings and proposed actions.

### **Stage 3: Resolution and Corrective Action**

Corrective actions will be implemented by the responsible entity (Contractor/CSC/PIU, as applicable) and tracked to closure. Where the complainant is satisfied, the grievance will be recorded as resolved and closed in the grievance log.

### **Stage 4: Escalation**

If the complainant is not satisfied with the proposed resolution, the grievance will be escalated in accordance with the Project GRM procedures for further review and decision-making. A hearing/ meeting may be arranged where necessary to facilitate resolution, including mediation where appropriate. Escalated grievances will be addressed within fifteen working days of escalation, where practicable.

### **Stage 5: Recourse to Legal System**

If the complainant remains dissatisfied after exhaustion of the Project GRM process, they retain the right to pursue the matter through the appropriate judicial system.

## **7.4.4 Record Keeping, Reporting, and Periodic Review**

Maintaining accurate grievance records is critical for transparency, accountability, and corrective action tracking. The PIU will compile grievance statistics (received/resolved/pending), including trend analysis and recurring issues, and include these in regular Project monitoring reports. Grievance data will be maintained in a manner that enables disaggregation (e.g., by gender and vulnerability), while ensuring confidentiality where required.

The GRM performance will be reviewed periodically under the Project's overall monitoring arrangements to assess effectiveness, responsiveness, and accessibility, and to identify opportunities for improvement. Corrective actions (e.g., improved communication, additional outreach, strengthened response time, or contractor enforcement) will be initiated where recurring issues are identified.

## **7.4.5 Role of Women in the GRM**

To ensure inclusivity and gender-responsive access, GRM information will be shared with women through culturally appropriate means and local language(s). Where required, a female focal person and outreach visits will be used to facilitate women's access to grievance channels. Women-related concerns including safety, access constraints, water and sanitation concerns, livelihood disruption, and other construction-related impacts will be addressed with priority and sensitivity.

GBV/SEA/SH-related grievances, if any, will be handled through confidential and survivor-centered procedures consistent with the Project GRM arrangements. Such cases will not be recorded in public registers with identifying information; instead, they will be managed through secure channels and referral pathways to appropriate services (health, psychosocial support, legal aid, and protection services), as applicable.

## **7.4.6 Worker Grievance Redress Mechanism (W-GRM) – SST-2**

In addition to the Project GRM for communities, the Contractor will establish and maintain a dedicated Worker GRM in line with ESS2 and the Project's labour management requirements. The worker's GRM will provide workers with a confidential, accessible, and non-retaliatory

mechanism to raise concerns related to working conditions, wages, OHS issues, discrimination, harassment, or other workplace grievances.

Key features of the Worker GRM include:

- Confidentiality: Complaints handled discreetly to prevent retaliation
- Multiple access channels: Verbal, written, anonymous submissions (e.g., drop-box at site offices)
- Timely response and escalation: If unresolved at site level, escalation to CSC/PIU as per Project procedures
- Documentation: Worker grievances recorded and tracked to closure, with confidentiality maintained for sensitive matters

It is proposed to establish the following prior to commencing project implementation activities including pre-construction activities:

- Grievance Focal Points (GFPs), which will educate people from each community. The GFPs should be community members who are easily approached by the community. The GFPs will be provided training by the Social Section of the PSIAC and PMU;
- A Public Complaints Centre (PCC) will be established in the project office and will be responsible for receiving, lodge, and investigating complaints;
- A Grievance Redress Committee (GRC) will be established in the PIU office, responsible for addressing grievances forwarded by the PCC.

#### **7.4.7 Grievance Focal Points (GFPs)**

The GFPs will be educated/literate people from each community that will assist and facilitate the community members in reporting grievances resulting from project activities. The GFPs will be provided training by the PMU/ CSC in facilitating grievance redress. The project team will facilitate the process and the GFPs (a female and male) will be selected for the sub-project area

##### **7.4.7.1 Public Complaints Centre**

In its capacity as the project proponent, the PIU in consultation with the Irrigation Department, Balochistan will establish a Public Complaints Centre (PCC) in the PIU office. The PIU and the local government bodies will issue public notices to inform the public within the 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 offices of the Deputy Commissioners Sohbatpur districts.

The PCC will be staffed by a full-time officer from the PIU and will be independent of the Project Consultants and contractor/operator. 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 complaint database and communicate with contractors, Site Engineers, PSIA, DC Sohbatpur with complainants.

The PCC will be responsible to receive, log, and investigate grievances at PCC level. However, the PCC is unable to resolve the grievances. The grievances will be referred to as GRC.

#### 7.4.7.2 Role and Responsibilities of PCC

The responsibilities of the PCC are:

- a. The PCC will log the complaint and date of receipt onto the complaint database and inform the CSC and the Contractor;
- b. The PCC will instruct contractors and CSC to refer to any complaints that they have received directly to the CSC. Similarly, the CSC will coordinate with local government to “capture” complaints made directly to them;
- c. The PCC, with the CSC and the Contractor, will investigate the complaint to determine its validity and to assess whether the source of the problem is due to project activities, and identify appropriate corrective measures. If corrective measures are necessary, CSC, through the PSIA, will instruct the Contractor to take necessary action;
- d. The PCC will inform the Complainant of investigation results and the action is taken;
- e. If the complaint is transferred from local government agencies, the CSC will submit 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;
- f. The PCC will review the Contractors response on the identified mitigation measures and the updated situation;
- g. The PCC will undertake additional monitoring, as necessary, to verify as well as review that any valid reason for complaint does not recur.

During the complaint investigation, the CSC should work together with the Contractor and the CSC. If mitigation measures are identified in the investigation, the Contractor will promptly carry out the mitigation. PSIA will ensure that the measures are carried out by the Contractor.

#### 7.4.8 Grievance Redress Committee (GRC)

The GRC will function as an independent body that will regulate PCC and the grievance redress process. At the sub-project level, a GRC will be headed by the Project Director and will be comprised of a Sociologist, Senior Engineer from PIU, and representative from the community.

##### 7.4.8.1 GRM Steps and Timeframe

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

**Stage 1:** When a grievance arises, the affected person may contact the contractor/operator or GFP, directly to resolve the issue of concern. If the issue is successfully resolved, no further follow-up is required;

**Stage 2:** If no ad hoc solution can be found, the affected person/s will submit an oral or written complaint to the PCC by themselves or through GRM entry points (the CFP, CSC and Contractor/Operator). 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 PSIA and Contractor. The PCC will, as necessary, through PSIA 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 the

PIU representatives (during operation). The contractors during construction and the PSIA during operation should implement the redress solution and convey the outcome to the PCC within seven (7) working days;

**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 through GRC under the auspices of the PD-PMU, where all relevant stakeholders (i.e., the complainant, CSC, 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 PSIA 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 affected people are still not satisfied with the reply in Stage 4, he or she can go through to local judicial proceedings.

#### **7.4.8.2 The budget of GRM Implementation**

The cost for the implementation of GRM activities of the sub project will be beard by the construction contractor.

### **7.5 ENVIRONMENTAL AND SOCIAL MITIGATION AND MONITORING PLAN**

The mitigation and monitoring plan (Table 7-2) is the core implementation tool for tracking compliance with the ESMP. It identifies impacts, mitigation measures, implementing responsibilities, monitoring locations, frequencies, parameters, and reporting responsibilities.

Table 7-2: Environmental and Social Management Plan

| Activities                                              | Environmental / Social Impact                                 | Mitigation Measures                                                                                                                                                           | Implementing Entity     | Monitoring Location                    | Monitoring Frequency / Duration | Monitoring Parameter (for compliant action)                                                                                                                                                                                     | CSC | PIU | M&E C |
|---------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|-------|
| Earthworks, embankment construction, borrow areas       | Soil erosion, sedimentation, landform alteration              | Optimize alignment; minimize cut-and-fill; erosion-resistant slopes; phased excavation; stabilize exposed soil; rehabilitate borrow pits; avoid productive agricultural land. | Contractor              | Work fronts, embankments, borrow areas | Weekly during construction      | Area of active erosion $\leq 5 \text{ m}^2$ per 500 m of embankment; all disturbed slopes $>10\%$ gradient stabilized within 7 days of earthwork completion; no visible erosion; slopes stabilized; borrow areas rehabilitated. | ✓   | ✓   |       |
| Fuel storage and equipment maintenance                  | Soil and groundwater contamination                            | Bunded and impervious fuel storage and maintenance areas with spill kits; immediate cleanup of spills.                                                                        | Contractor              | Camps and work sites                   | Monthly                         | No oil or fuel contamination observed; spill kits available and functional; no uncontrolled leakage.                                                                                                                            | ✓   | ✓   |       |
| Design of flood protection bund and drainage facilities | Reduced effectiveness under extreme rainfall and flood events | Climate-resilient design with adequate freeboard, stone pitching, gabion apron protection, and hydrology reviewed against recent floods and climate projections.              | Design Consultant / PMU | Design stage                           | Once during design approval     | Climate-resilient design parameters incorporated; freeboard requirements achieved; flood protection measures integrated.                                                                                                        | ✓   | ✓   |       |

| Activities                                     | Environmental / Social Impact         | Mitigation Measures                                                                                                                   | Implementing Entity | Monitoring Location                     | Monitoring Frequency / Duration | Monitoring Parameter (for compliant action)                                                                   | CSC | PIU | M&E C |
|------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------|-----|-----|-------|
| Construction activities and material transport | Dust emissions and exhaust pollution  | Water sprinkling; cover materials; maintain machinery; provide masks; prohibit open burning.                                          | Contractor          | Construction sites, haul routes, camps  | Monthly                         | PM10 concentration $\leq 150 \mu\text{g}/\text{m}^3$ (24-hour NEQS); no excessive dust; machinery maintained. | ✓   | ✓   |       |
| Operation of construction machinery            | Noise disturbance to communities      | Low-noise equipment; daytime work only; no pressure horns; hearing protection; noise monitoring.                                      | Contractor          | Near settlements, schools, mosques      | Monthly                         | Noise levels within NEQS limits; no unresolved complaints from nearby communities.                            | ✓   | ✓   |       |
| Construction camps and works near water bodies | Surface and groundwater contamination | Septic tanks and settling ponds; no washing near water bodies; camps and fuel storage $\geq 1$ km from water sources; debris control. | Contractor          | Camps, drainage channels, water sources | Monthly                         | No contamination of water bodies; wastewater properly managed; no visible pollution.                          | ✓   | ✓   |       |
| Construction and camp waste generation         | Soil and water pollution              | Waste segregation; disposal at approved sites; used oil to licensed recyclers; reuse of suitable construction material.               | Contractor          | Camps, disposal sites                   | Monthly                         | No uncontrolled dumping; waste disposal records maintained; waste management plan implemented.                | ✓   | ✓   | ✓     |

| Activities                               | Environmental / Social Impact                      | Mitigation Measures                                                                                                                                   | Implementing Entity | Monitoring Location                  | Monitoring Frequency / Duration | Monitoring Parameter (for compliant action)                                           | CSC | PIU | M&E C |
|------------------------------------------|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------------|---------------------------------|---------------------------------------------------------------------------------------|-----|-----|-------|
| Camp establishment and access routes     | Loss of vegetation; dust on crops                  | Limit vegetation clearance; dust suppression; crop protection; compensatory plantation with communities.                                              | Contractor          | Camps, access routes                 | Monthly                         | Minimal vegetation loss; compensatory plantation completed where required.            | ✓   | ✓   |       |
| Employment of construction workforce     | Occupational injuries; poor working conditions     | PPE; safety training; sanitation and water at camps; Code of Conduct; no child/forced labor.                                                          | Contractor          | Work sites and camps                 | Monthly                         | PPE compliance >95%; training records maintained; no child or forced labor incidents. | ✓   | ✓   | ✓     |
| Construction near communities            | Accidents; unsafe access                           | Fencing and demarcation; barricade open pits; warning signage and lighting; emergency response procedures.                                            | Contractor          | Work sites near settlements          | Weekly                          | No unauthorized access; no major accidents; warning signs maintained.                 | ✓   | ✓   |       |
| Construction traffic and site activities | Traffic congestion; accidents; public safety risks | Approved Traffic Control and Safety Management Plan (TCSMP); traffic control personnel; diversions and signage; speed limits; authority coordination. | Contractor          | Haul routes, work sites, settlements | Daily during construction       | Approved TCSMP implemented; no serious traffic incidents; speed controls enforced.    | ✓   | ✓   | ✓     |

| Activities                     | Environmental / Social Impact                     | Mitigation Measures                                                                                     | Implementing Entity | Monitoring Location   | Monitoring Frequency / Duration | Monitoring Parameter (for compliant action)                                       | CSC | PIU | M&E C |
|--------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------|---------------------|-----------------------|---------------------------------|-----------------------------------------------------------------------------------|-----|-----|-------|
| Temporary access restriction   | Livelihood disruption; vulnerable groups affected | Avoid private land where possible; maintain temporary access; advance notice; GRM; targeted assistance. | Contractor / PMU    | Project area          | Monthly                         | Complaints resolved within specified timeframe; access maintained.                | ✓   | ✓   |       |
| Labor influx                   | Community-worker conflict                         | Local hiring; Code of Conduct; Community Liaison Officer; GRM implementation.                           | Contractor          | Camps and communities | Monthly                         | No unresolved community-worker conflicts.                                         | ✓   | ✓   |       |
| Labor influx                   | GBV / SEA / SH risks                              | GBV Code of Conduct; worker training; confidential reporting; referral pathways; zero tolerance policy. | Contractor          | All work sites        | Quarterly                       | Training conducted; no reported GBV/SEA/SH cases; reporting mechanism functional. | ✓   | ✓   | ✓     |
| Construction activities        | Disturbance to cultural practices                 | Community consultations; avoid sensitive times; respect local customs and traditions.                   | Contractor          | Project area          | Monthly                         | Community concerns addressed; no unresolved cultural issues.                      | ✓   | ✓   |       |
| Overall project implementation | Residual environmental and social risks           | Continuous ESMP monitoring, supervision, corrective actions, and safeguard                              | Contractor / PMU    | Entire project area   | Throughout project              | Residual impacts remain low and manageable; ESMP                                  | ✓   | ✓   | ✓     |

| Activities | Environmental / Social Impact | Mitigation Measures | Implementing Entity | Monitoring Location | Monitoring Frequency / Duration | Monitoring Parameter (for compliant action) | CSC | PIU | M&E C |
|------------|-------------------------------|---------------------|---------------------|---------------------|---------------------------------|---------------------------------------------|-----|-----|-------|
|            |                               | compliance reviews. |                     |                     |                                 | compliance maintained.                      |     |     |       |

### 7.5.1 Reporting and Non-Compliance Management

The Contractor shall submit monthly compliance reports to CSC. CSC shall verify compliance, document non-compliances, and submit verified reports to PIU. The PIU shall apply contractual enforcement measures where repeated or material non-compliance occurs, including withholding payments, requiring corrective actions, or work stoppage in serious cases.

### 7.5.2 ESMP Budget

Costs of ESMP implementation shall be included in the Contractor's BOQ as a distinct and enforceable line item, as required. Monitoring, staffing, training, and community awareness activities shall be adequately budgeted to ensure implementation.

Table 7-3: ESMP Implementation Cost Breakdown

| Sr. No.  | Component                                    | Description / Cost Basis                                                                                                                                            | Qty        | Unit Rate | Estimated Cost PKR |
|----------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------|--------------------|
| <b>1</b> | <b>Environmental Mitigation Measures</b>     |                                                                                                                                                                     |            |           |                    |
| 1.1      | Contractor ESMP / Sub-plans                  | Preparation of C-ESMP, OHS Plan, Waste Management Plan, Emergency Response Plan, Traffic Management Plan, Labour Management Procedure, GRM and GBV/SEA/SH procedure | 1 job      | 150,000   | 150,000            |
| 1.2      | Waste management — solid/hazardous           | Waste bins, disposal of construction/camp waste, spill kits, minor hazardous waste handling, increased duration allowance                                           | 18 months  | -         | 280,000            |
| 1.3      | Erosion control, noise and vibration control | Temporary drains, sandbags, silt traps, tarpaulin covers, exposed-area protection, signage, barricading and maintenance                                             | 18 months  | -         | 250,000            |
| 1.4      | Dust suppression                             | Water sprinkling through bowser/truck; assumed 144 trips @ Rs. 1,800/trip                                                                                           | 144 trips  | 1,800     | 259,200            |
|          |                                              | <b>Subtotal — Environmental Mitigation</b>                                                                                                                          |            |           | <b>939,200</b>     |
| <b>2</b> | <b>Social Mitigation Measures</b>            |                                                                                                                                                                     |            |           |                    |
| 2.1      | Community consultation and GRM               | Six quarterly consultation meetings, GRM documentation, complaint follow-up, community notices, local travel and communication                                      | 6 quarters | -         | 330,000            |
| 2.2      | HSE / PPE cost                               | Initial PPE, replacement PPE, first-aid kits, fire extinguishers, signage, barricading and safety consumables for extended duration                                 | 1 job      | -         | 493,000            |
|          |                                              | <b>Subtotal — Social Mitigation</b>                                                                                                                                 |            |           | <b>823,000</b>     |
| <b>3</b> | <b>Training and Capacity Building</b>        |                                                                                                                                                                     |            |           |                    |

| Sr. No.  | Component                                  | Description / Cost Basis                                                                                                                       | Qty        | Unit Rate | Estimated Cost PKR |
|----------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------|--------------------|
| 3.1      | Awareness campaigns and trainings          | Training on traffic safety, OHS, emergency response, GBV/SEA/SH, GRM, gender and environment; six quarterly sessions and regular toolbox talks | 18 months  | -         | 425,000            |
|          |                                            | <b>Subtotal — Training and Capacity Building</b>                                                                                               |            |           | <b>425,000</b>     |
| <b>4</b> | <b>Monitoring and Reporting</b>            |                                                                                                                                                |            |           |                    |
| 4.1      | Environmental quality monitoring           | Quarterly monitoring of air, water and noise through qualified laboratory                                                                      | 6 rounds   | 70,000    | 420,000            |
| 4.2      | Social and environmental impact monitoring | Field visits, consultations, FGDs, community feedback, photographic record and mitigation verification                                         | 6 quarters | 55,000    | 330,000            |
| 4.3      | Reporting and documentation                | Monthly ESMP compliance reports, photographic record, incident reports and final compliance report                                             | 18 months  | -         | 194,000            |
|          |                                            | <b>Subtotal — Monitoring and Reporting</b>                                                                                                     |            |           | <b>944,000</b>     |
| <b>5</b> | <b>HR / ESMP Implementation Staff</b>      |                                                                                                                                                |            |           |                    |
| 5.1      | HSE Officer                                | Part-time/site-visit basis; 4 visits/month @ Rs. 12,000/visit                                                                                  | 72 visits  | 12,000    | 864,000            |
| 5.2      | Community and Safety Liaison Officer       | Part-time support for community coordination, GRM and safety communication                                                                     | 18 months  | 25,000    | 450,000            |
| 5.3      | Paramedic / First-aid support              | On-call/part-time medical support and first-aid management                                                                                     | 18 months  | 18,000    | 324,000            |
|          |                                            | <b>Subtotal — HR Cost</b>                                                                                                                      |            |           | <b>1,638,000</b>   |
| <b>6</b> | <b>Contingency</b>                         | For emergency incidents, additional mitigation, spill response, additional consultations and unforeseen ESMP requirements; 5% of subtotal      | 5%         | -         | 238,460            |
|          |                                            | <b>Total ESMP Budget — 18 Months</b>                                                                                                           |            |           | <b>5,007,660</b>   |

### 7.5.3 Training and Skill Development

Training requirements shall include induction, occupational health and safety, environmental management, social and gender awareness, and specialized modules (hazardous materials, traffic safety, and camp management). The Contractor shall maintain records and submit to CSC and PIU.

## **7.6 DEVELOPMENT OF OTHER E&S PLANS / INSTRUMENTS**

Prior to mobilization, the Contractor shall prepare a C-ESMP/CESMP consistent with this ESMP and include relevant sub-plans, including OHS Plan, Waste and Spoil Management Plan, Traffic Management Plan, Emergency Response Plan, Community Health and Safety Plan, Labor Management Plan, Camp Management Plan, Gender Action measures (as applicable), and Chance Find Procedure.

Each sub-plan shall specify responsibilities, monitoring, reporting, and enforcement procedures and shall be updated as necessary during construction.

## 8 REFERENCES

The following documents were referred to during the preparation of ESMP.

1. Bidding Documents (Zain ul Abideen Khan Khoso Flood Protection Works).
2. Engineering Drawings (Zain ul Abideen Khan Khoso Flood Protection Scheme).
3. Social Impact Assessment and Management Plan, ADB Emergency Flood Assistance Project, 2023.
4. The Balochistan Environmental Protection Act, 2012.
5. The Pakistan Environmental Protection Act, 1997.
6. The Balochistan Wildlife Protection, Preservation, Conservation and Management Act, 2014.
7. The International Union for Conservation of Nature (IUCN) Red List of Threatened Species.
8. Guidelines for Public Consultation, Pakistan Environmental Protection Agency (Pak-EPA).
9. National Disaster Management Plan (NDMP), Government of Pakistan, 2012.

# ANNEXURES

## ANNEXURE -A

### CODE OF CONDUCT FOR CONTRACTOR'S STAFF

#### 1. Purpose

This Code of Conduct establishes mandatory standards of behavior for all contractor personnel engaged under the project. Compliance with this Code is a contractual obligation and applies to all staff, workers, subcontractors, and associated personnel.

All personnel are required to sign this Code of Conduct prior to commencement of work. Any refusal to sign must be documented in writing, including justification.

#### 2. Social Conduct Requirements

All personnel shall:

- Maintain professional and respectful behaviour toward local communities at all times.
- Respect local customs, traditions, and cultural norms.
- Refrain from any form of discrimination based on gender, age, ethnicity, nationality, religion, disability, or sexual orientation.
- Respect privacy and dignity, particularly of women and vulnerable groups.
- Strictly prohibit and refrain from sexual harassment, gender-based violence (GBV), sexual exploitation and abuse (SEA), and any form of inappropriate sexual conduct.
- Demonstrate responsible and discreet personal behavior, including adherence to public health awareness measures (including HIV/AIDS awareness).

#### 3. Health and Safety Obligations

All personnel shall:

- Comply fully with site-specific Health and Safety Plans.
- Demonstrate commitment to workplace safety and accident prevention.
- Maintain zero tolerance for harassment, bullying, intimidation, or offensive physical or verbal behavior.
- Properly use Personal Protective Equipment (PPE) provided at all times.
- Participate in mandatory health and safety training sessions.

#### 4. Environmental Protection Obligations

All personnel shall:

- Avoid any activity that causes environmental damage.
- Refrain from hunting, poaching, or harming wildlife.
- Prohibit illegal tree cutting or vegetation removal.
- Comply with all pollution prevention and waste management measures.
- Follow environmental rules and regulations applicable to the project site.

## TEMPLATE FOR PROJECT WORKERS CODE OF CONDUCT

I, \_\_\_\_\_, acknowledge that preventing any misconduct as stipulated in this code of conduct, including sexual exploitation and abuse (SEA), sexual harassment (SH), and child abuse/exploitation are important. Any activity, which constitute acts of gross misconduct are therefore grounds for sanctions, penalties or even termination of employment. All forms of misconduct are unacceptable be it on the work site, the work site surroundings, or at worker's camps. Prosecution of those who commit any such misconduct will be pursued as appropriate. I agree that while working on this project, I will:

- a. Consent to security background check;
1. Treat women, children (persons under the age of 18) and persons with disability with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, birth or other status;
2. Not use language or behavior towards men, women or children/learners that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate;
3. Carry out his/her duties competently and diligently;
4. Comply with this Code of Conduct and all applicable laws, regulations and other requirements, including requirements to protect the health, safety and well-being of other Contractor's Personnel and any other person;
5. Maintain a safe working environment including by: a. ensuring that workplaces, machinery, equipment and processes under each person's control are safe and without risk to health;
- b. wearing required personal protective equipment;
- c. using appropriate measures relating to chemical, physical and biological substances and agents; and
- d. following applicable emergency operating procedures.
6. Report work situations that he/she believes are not safe or healthy and remove himself/herself from a work situation which he/she reasonably believes presents an imminent and danger to his/her life or health;
7. Treat other people with respect, and not discriminate against specific groups such as women, people with disabilities, migrant workers or children;
8. Not engage in any form of sexual harassment including unwelcome sexual advances, requests for sexual favors, and other unwanted verbal or physical conduct of a sexual nature with other Contractor's or Employer's Personnel;
9. Not participate in sexual activity with children/learners including grooming or through digital media. Mistaken belief regarding the age of a child and consent from the child is not a defense;
10. Not exchange money, employment, goods, or services for sex, with community members including sexual favors or other forms of humiliating, degrading or exploitative behavior;
11. Attend trainings related to HIV and AIDS, SAE/SH, occupational health and any other relevant courses on safety as requested by my employer;
12. Report to the relevant committee any situation where I may have concerns or suspicions regarding acts of misconduct by a fellow worker, whether in my company or not, or any breaches of this code of conduct provided it is done in good faith;
13. Regarding children (under the age of 18):

a) Refrain from hiring children for domestic or other labor, which is inappropriate given their age, or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.

b) Comply with all relevant local legislation, including labor laws in relation to child labor.

14. Refrain from any form of theft for assets and facilities including from surrounding communities.
15. Remain in designated working area during working hours;
16. Refrain from possession of alcohol and illegal drugs and other controlled substances in the workplace and being under influence of these substances on the job and during working hours;
17. Follow prescribed environmental occupation health and safety standards;
18. Channel grievances through the established grievance redress mechanism.

I understand that the onus is on me to use common sense and avoid actions or behaviors that could be construed as misconduct or breach this code of conduct. I acknowledge that I have read and understand this Code of Conduct, and the implications have been explained with regard to sanctions on-going employment should I not comply.

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

For the Employer/Contractor

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## ANNEXURE-B

### TRAINING PLAN

The Contractor shall include a training plan within the CESMP which details the program for the delivery of training, demonstrating the training shall be carried out initially at the induction of staff and repeated intermittently throughout the project, to cover the subjects included in the following table. Some briefings/ sessions will be conducted daily and some with the induction of new staff and the others at the start of the project and quarterly basis.

| S. No | List of Topics/Training                                                                         | Contents                                                                                                                                                                                                                                                                               | Timeline               | Frequency   | Staff                                                   |
|-------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------|---------------------------------------------------------|
| 1.    | Handling, use, and disposal of hazardous material                                               | <ul style="list-style-type: none"> <li>Type of Hazardous Material and waste</li> <li>Routes of Entry</li> <li>Safety Labelling</li> <li>Use of Safety Data Sheet</li> <li>Goal and Objectives</li> <li>Actions to Do and Preventive Measures</li> <li>How to avoid Injuries</li> </ul> | Throughout the project | Quarterly   | All construction staffs                                 |
| 2.    | Waste Management                                                                                | <ul style="list-style-type: none"> <li>Introduction to types and waste</li> <li>Solid Waste and its types</li> <li>Effects of Solid waste</li> <li>Waste Management Concept Collection, storage, and disposal techniques</li> <li>What to do and what no to do</li> </ul>              | Throughout the project | Quarterly   | All construction staff working on regulating structures |
| 3.    | Efficient & safe driving practices, including road & vehicle restrictions                       | <ul style="list-style-type: none"> <li>Introduction</li> <li>Causes of Road Accidents</li> <li>Driving hazards</li> <li>Road Journey</li> <li>Vehicle inspection</li> <li>Health Condition</li> </ul>                                                                                  | Throughout the project | Bi-Annually | All staff                                               |
| 4.    | Actions to be taken in the event of major or minor pollution event on land/Pollution Prevention | <ul style="list-style-type: none"> <li>Type of pollution and its causes</li> <li>How to Avoid pollution</li> <li>What to do in case of an event</li> <li>Reduction Techniques</li> <li>Benefits</li> </ul>                                                                             | Throughout the project | Quarterly   | All Staff                                               |
| 5.    | Health & Safety: Safe way to work & hazard awareness                                            | <ul style="list-style-type: none"> <li>Objectives</li> <li>Types of Hazards</li> <li>Work at height procedures</li> <li>Moving of machinery</li> <li>Use of PPEs</li> <li>Housekeeping</li> <li>Hazards control</li> </ul>                                                             | Throughout the project | Quarterly   | All construction staff                                  |

| S. No | List of Topics/Training                           | Contents                                                                                                                                                                                                                                                                                  | Timeline               | Frequency                    | Staff                          |
|-------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------|--------------------------------|
| 6.    | Health & Safety:<br>Safe use of plant & equipment | <ul style="list-style-type: none"> <li>• Use of Plant procedures</li> <li>• Competency and training</li> <li>• Machine guarding</li> <li>• Dismantling of equipment</li> <li>• Daily maintenance</li> <li>• Safe operation</li> <li>• Intended use of equipment's</li> </ul>              | Throughout the project | Quarterly                    | Operators of plant & equipment |
| 7.    | Health & Safety:<br>Working at height             | <ul style="list-style-type: none"> <li>• Access and Egress, Loading Places</li> <li>• Ladders</li> <li>• Landing Places</li> <li>• Openings, Corners, Breaks, Edges, and Joisting</li> <li>• Work over Water</li> <li>• Safety Nets, Belts and Harnesses</li> </ul>                       | Throughout the project | Monthly/Bi annually          | All construction staff         |
| 8.    | Health & Safety:<br>Working near/on water         | <ul style="list-style-type: none"> <li>• Contamination and biological/chemical hazards</li> <li>• Weather conditions</li> <li>• Hypothermia and hyperthermia</li> <li>• Unstable surface</li> <li>• Electrical hazards</li> <li>• Lone working</li> <li>• Accidental immersion</li> </ul> | Throughout the project | Monthly/Bi annually          | All construction staff         |
| 9.    | Health & Safety:<br>Use of PPE                    | <ul style="list-style-type: none"> <li>• Common Type of PPEs</li> <li>• Use of PPEs</li> <li>• Benefits</li> <li>• Workplace requirement of PPEs</li> <li>• Care and Maintenance of PPEs</li> <li>• When PPE is necessary</li> <li>• Limitations of the PPE</li> </ul>                    | Throughout the project | Start & Quarterly refreshers | All construction staff         |
| 10.   | Emergency procedures and evacuation               | <ul style="list-style-type: none"> <li>• Types of emergency</li> <li>• What is an Emergency plan</li> <li>• What is an individual role in case of emergency</li> <li>• Supervising Rescue Operations</li> <li>• Emergency reporting procedures</li> <li>• Means of egress</li> </ul>      | Throughout the project | Monthly                      | All staff                      |
| 11.   | Fire fighting                                     | <ul style="list-style-type: none"> <li>• Objectives</li> <li>• How fire starts</li> <li>• Use of fire extinguishers</li> <li>• Type of Fire extinguishers</li> <li>• Fire safety inspection</li> <li>• Competency required</li> </ul>                                                     | Throughout the project | Quarterly & Monthly drills   | All staff                      |

| S. No | List of Topics/Training                                                                                                                                                                                                                     | Contents                                                                                                                                                                                                                                                                                                                                                                                                                   | Timeline               | Frequency | Staff               |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------|---------------------|
|       |                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>Action in case of fire</li> <li>Do's and Don'ts</li> </ul>                                                                                                                                                                                                                                                                                                                          |                        |           |                     |
| 12.   | Site inductions, including requirements under the CESMP & details of environmentally sensitive areas of the site                                                                                                                            | <ul style="list-style-type: none"> <li>Purpose of induction training</li> <li>Why health and safety is important</li> <li>What is CESMP</li> <li>What is the requirement of CESMP</li> <li>Duty of care and responsibility</li> <li>Your responsibility and our responsibility</li> <li>Protection of Environment</li> <li>What is an ecosystem</li> <li>What is ecology</li> <li>Identification of key species</li> </ul> | Throughout the project | Monthly   | All staff           |
| 13.   | Culturally sensitive awareness raising on HIV/AIDS and the spread of sexually transmitted diseases. Awareness-raising on risks, prevention and available treatment of vector-borne Diseases, Cultural sensitivities of the local population | <ul style="list-style-type: none"> <li>Valuing cultural difference</li> <li>Avoiding habits in other areas during migration</li> <li>What are sexually transmitted diseases</li> <li>Type of infection</li> <li>Prevention</li> <li>Strategies for controlling vector-borne diseases</li> <li>Type of vector-borne diseases</li> <li>Treatment procedures</li> </ul>                                                       | Throughout the project | Quarterly |                     |
| 14    | Culturally sensitive awareness raising on GBV/SEA/SH                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>Definition and types of GBV, SEA, and SH</li> <li>Causes, risks, and impacts on individuals and communities</li> <li>Respect for local culture, norms, and values</li> <li>Appropriate behaviour and valuing cultural differences</li> </ul>                                                                                                                                        | Throughout the project | Quarterly | All staff/Community |

| S. No | List of Topics/Training | Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Timeline | Frequency | Staff |
|-------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------|-------|
|       |                         | <ul style="list-style-type: none"> <li>• Rights of women, children, and vulnerable groups</li> <li>• Code of Conduct: acceptable and prohibited behaviours</li> <li>• Zero tolerance for GBV, SEA, and SH</li> <li>• Prevention measures and safe workplace practices</li> <li>• Awareness on HIV/AIDS and sexually transmitted diseases (STDs)</li> <li>• Basic knowledge of vector-borne diseases and prevention</li> <li>• Reporting mechanisms (GRM) and confidentiality</li> <li>• Survivor support services (medical, psychosocial, legal)</li> </ul> |          |           |       |

## ANNEXURE-C

### ENVIRONMENTAL AND SOCIAL MONITORING CHECKLIST

Project Name: \_\_\_\_\_ Activities Inspected \_\_\_\_\_

Location \_\_\_\_\_ Weather Condition \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

| Sr. No | Performance Indicators                                                                              | Yes | No | N/A | Des. | Remarks |
|--------|-----------------------------------------------------------------------------------------------------|-----|----|-----|------|---------|
| 1.     | Heavy Dust                                                                                          |     |    |     |      |         |
| 2.     | Excessive noise or vibration                                                                        |     |    |     |      |         |
| 3.     | Water sprinkling at the construction and disposal sites                                             |     |    |     |      |         |
| 4.     | Discharge of waste water to nearby water course/water body                                          |     |    |     |      |         |
| 5.     | Any spillage of fuel/oil observed                                                                   |     |    |     |      |         |
| 6.     | Dumping of solid waste at designated Site                                                           |     |    |     |      |         |
| 7.     | Dumping of construction waste/spoil at designated Site                                              |     |    |     |      |         |
| 8.     | Protection of Flora/Fauna                                                                           |     |    |     |      |         |
| 9.     | Availability of Drinking water                                                                      |     |    |     |      |         |
| 10.    | Site housekeeping                                                                                   |     |    |     |      |         |
| 11.    | Warning signs displayed near construction zone.                                                     |     |    |     |      |         |
| 12.    | Use of PPEs by the beneficiaries and workers                                                        |     |    |     |      |         |
| 13.    | Any incident/accident (use separate proforma)                                                       |     |    |     |      |         |
| 14.    | Any GBV/SEA and privacy related complaints                                                          |     |    |     |      |         |
| 15.    | Availability of first aid boxes at site                                                             |     |    |     |      |         |
| 16.    | Any land ownership provided to women beneficiaries                                                  |     |    |     |      |         |
| 17.    | Any involuntary resettlement under the project                                                      |     |    |     |      |         |
| 18.    | Proportion of local labor in the project                                                            |     |    |     |      |         |
| 19.    | Child/Force Labor                                                                                   |     |    |     |      |         |
| 20.    | Is the GRM properly in place                                                                        |     |    |     |      |         |
| 21.    | Regular monitoring of complaint register is in practice                                             |     |    |     |      |         |
| 22.    | Any exclusion, specially to women, disadvantaged groups and marginalized people from project forums |     |    |     |      |         |
| 23.    | Any elite capture related grievance                                                                 |     |    |     |      |         |
| 24.    | Participation of women, children, and vulnerable groups in consultations and project activities     |     |    |     |      |         |
| 25.    | Any Unusual Conditions (e.g., heavy rain, extreme weather)                                          |     |    |     |      |         |
| 26.    | Chance finds during construction                                                                    |     |    |     |      |         |

**Note If any:**

**Filled By:** \_\_\_\_\_

**Signature**

**Name:** \_\_\_\_\_ **Position:** \_\_\_\_\_

**Extra Note if needed:**

Note: mention the location and extent of degradation of exceeding indicators in description column or in a note if necessary.

## ANNEXURE: D

### ENVIRONMENTAL CODE OF PRACTICES (ECOPS)

The basic objective of the ESMP exercise is to minimize the adverse impacts of project interventions on the environment of the sub-project areas. The following Environmental Code of Practices (ECops) provides the method by which the Contractor should comply with the mitigations contained in this ESMP. The objectives of these ECops are to provide the best guideline practices on environmental, health, and safety during the operation phase of the sub-project.

The following ECops be followed best practices:

- Water resource management
- Drainage
- Waste Management
- Management of fuel and hazardous material
- Management of soil quality
- Management of air quality
- Management of Noise and vibration
- Protection of flora
- Protection of Fauna
- Health and Safety
- Traffic Management
- Management of Contractor Camp
- Water Resource Management

#### ECop for Water Resource Management

| Activity                                | Environmental Impact                                                                                                                             | Environmental Management Guideline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Drinking water                          | Groundwater at shallow depths might be contaminated and hence not suitable for drinking purposes.                                                | Tube wells will be installed with due regard to the surface environment, protection of groundwater from surface contaminants, and protection of aquifer cross-contamination. Control the quality of the groundwater to be used for drinking water on the basis of NEQS standards for drinking water. Safe and sustainable discharges are to be ascertained prior to the selection of pumps. All tube wells, test holes, monitoring wells that are no longer in use or needed shall be properly decommissioned                                                                                                                                                                        |
| Construction activities in water bodies | Construction works in the water bodies will increase sediment and contaminant loading, and affect the habitat of fish and other aquatic biology. | Monitor the water quality in the runoff from the site, and improve work practices as necessary. Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways, stormwater systems or underground water tables. Use environment-friendly and nontoxic slurry during the construction of piles to discharge into the river. Reduce infiltration of contaminated drainage through stormwater management design. Do not discharge cement and water curing used for cement concrete directly into watercourses and drainage inlets. |
| Discharge from construction sites       | During construction both surface and groundwater quality may be deteriorated                                                                     | Install temporary sediment basins, where appropriate, to capture sediment-laden runoff from the site. Divert runoff from undisturbed areas around the construction site Stockpile materials away from drainage lines Prevent all                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                   | <p>due to construction activities in the river, sewerages from construction sites and work camps. The construction works will modify ground cover and topography changing the surface water drainage patterns, including infiltration and storage of stormwater. The change in the hydrological regime leads to increased rates of runoff and in sediment and contaminant loading, increased flooding, groundwater contamination, and affect the habitat of fish and other aquatic biology.</p> | <p>solid and liquid wastes entering waterways by collecting solid waste, oils, chemicals, Bhitumen spray waste and wastewaters from brick, concrete, and asphalt cutting where possible and transport to an approved waste disposal site or recycling depot. Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off-site or into approved bunded areas on site. Ensure that tires of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This should be done in every exit of each construction vehicle to ensure the local roads are kept clean.</p> |
| Soil erosion and siltation                                        | <p>Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies.</p>                                                                                                                                                                                                                                                                                                                                                           | <p>Stabilize the cleared areas not used for construction activities with vegetation or appropriate surface water treatments as soon as practicable following earthwork to minimize erosion. Ensure that roads used by construction vehicles are swept regularly to remove sediment. Water the material stockpiles (where appropriate), access roads and bare soils on an as-required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. High winds)</p>                                                                                                                                                                                            |
| Handling, use, storage & disposal of hazardous material and waste | <p>Water pollution from the storage, handling, and disposal of hazardous materials and general construction waste, and accidental spillage</p>                                                                                                                                                                                                                                                                                                                                                  | <p>Follow the management guidelines proposed in ECoPs for Waste Management and Management of Fuels &amp; Hazardous Substances. Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter a watercourse or underground water tables</p>                                                                                                                                                                                                                                                                                                    |

ECoP for Drainage

| Activity                                          | Environmental Impact                                                                                                                                                                                      | Environmental Management Guideline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Excavation and earthworks, and construction yards | Lack of proper drainage for rainwater, surface water, liquid waste or wastewater owing to the construction activities harms the environment in terms of water and soil contamination and mosquito growth. | Provide alternative drainage for rainwater if the construction works/earth-fillings cut the established drainage line. Rehabilitate road drainage structures immediately if damaged by contractors' road transports. Build new drainage lines as appropriate and required for wastewater from the construction yards connecting to the available nearby recipient water bodies. Ensure wastewater quality conforms to the relevant standards before being discharged into recipient water bodies. Ensure the internal roads/hard surfaces in the construction yards/construction camps have adequate stormwater drainage to accommodate high runoff during a downpour and that there will be no stagnant water remaining in the area at the end of the downpour. Construct wide drains instead of deep drains to avoid sand deposition in the drains that will require frequent cleaning. Protect natural slopes of drainage channels to ensure adequate stormwater drains. Regularly inspect and maintain all drainage channels to assess and alleviate any drainage congestion problem. Reduce infiltration of contaminated drainage through stormwater management design |

ECoP for Waste Management

| Activity                       | Environmental Impact                                                                | Environmental Management Guideline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Generation of hazardous wastes | Safety, health and environmental hazards due to improper waste Management practices | Collect chemical wastes in 200-liter drums (or similar sealed containers), appropriately labeled for safe transport to an approved chemical waste depot. Store, transport and handle all chemicals, avoiding potential environmental pollution. Collect hydrocarbon wastes, including lubricating oils, for safe transport off-site for reuse, recycling, treatment or disposal at approved locations. Construct concrete or other impermeable flooring to prevent seepage in case of spills. Store all hazardous wastes appropriately in Bunded areas away from watercourses. Make available Material Safety Data Sheets (MSDS) for hazardous materials on-site during construction.                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| General waste                  | Soil, surface water & groundwater pollution from the improper disposal of wastes.   | Request suppliers to minimize packaging where practicable. Place a high emphasis on good housekeeping practice. Collect and transport non-hazardous wastes to all the approved disposal sites. Train and instruct all personnel in waste management practices and procedures as a component of the environmental induction process. Develop a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food waste, etc.) prior to commencing of construction and submit to Supervisory Consultant for approval. Organize disposal of all wastes generated during construction in an environmentally acceptable manner. This will include consideration of the nature and location of the disposal site, so as to cause less environmental impact. Maintain all construction sites in a clean, tidy and safe condition and provide and maintain appropriate facilities for the temporary storage of all wastes before transportation and final disposal. Provide refuse containers at each worksite. Minimize the production of waste materials through the '3 Rs' (Reduce, Recycle and Reuse) |

|  |  |                                                                              |
|--|--|------------------------------------------------------------------------------|
|  |  | approach. Segregate and reuse or recycle all the wastes, wherever practical. |
|--|--|------------------------------------------------------------------------------|

ECoP for Management of Fuels & Hazardous Substances

| Activity                  | Environmental Impact                                                                                                                                                                                                                                                                      | Environmental Management Guideline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fuels and hazardous goods | Materials used in construction have the potential to be a source of contamination. Improper storage and handling of fuels, lubricants, chemicals and hazardous goods/materials on-site, and potential spills from these goods may harm the environment or health of construction workers. | Put containers and drums in temporary storage in clearly marked areas, where they will not be run over by vehicles or heavy machinery. The area should preferably slope or drain to a safe collection area in the event of a spill. Train the relevant construction personnel in the handling of fuels and spill/pollution control procedures. Store dangerous goods in bunded areas on a top of a sealed plastic sheet or other impervious material away from watercourses. Refuelling should occur only within bunded areas. Make available MSDS for chemicals and dangerous goods on-site. Transport waste of dangerous goods, which cannot be recycled, to a designated & approved disposal site. Prepare pollution control procedures and submit the plan to the Engineer. Put containers and drums in permanent storage areas on an impermeable floor that slopes in a safe collection area in the event of a spill or leak. |

ECoP for Management of Soil Quality

| Activity                                 | Environmental Impact                                                    | Environmental Management Guideline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Construction material stock piles        | Erosion from construction material stockpiles may contaminate the soils | Protect the toe of all stockpiles, where erosion is likely to occur, protect with silt fences, straw bales or bunds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Storage of hazardous and toxic chemicals | Spillage of hazardous and toxic chemicals will contaminate the soils    | Strictly manage the waste management plans proposed and the storage of materials. Construct appropriate spill contaminant facilities for all fuel storage areas. Establish and maintain hazardous materials, a register detailing the location and quantities of hazardous substances, including storage, use, and disposal. Train personnel and implement safe work practices for minimizing the risk of spillage. Identify the cause of contamination, if it is reported, and contain the area of contamination. The impact may be contained by isolating the source or implementing controls around the affected site. Remediate the contaminated land using the most appropriate available method |

ECoP for Air Quality

| Activity               | Environmental Impact                                                                           | Environmental Management Guideline                                                                                                                                                                                                                                                                                                                        |
|------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Construction machinery | Air quality can be adversely affected by emissions from machinery and the combustion of fuels. | Machinery causing excess pollution (e.g. visible smoke) will be banned from construction sites. Fit machinery with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition. Focus special attention on containing the emissions from generators. Service all equipment regularly to minimize emissions |

ECoP for Noise & Vibration

| Activity                       | Environmental Impact                                                                                                                        | Environmental Management Guideline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                |                                                                                                                                             | Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution. Avoid the use of material with greater potential for contamination by substituting them with more environmentally friendly material. Provide absorbent and containment material (e.g. Absorbent mats) where hazardous material is used and stored and train personnel in their correct use. Provide protective clothing, safety boots, helmets, masks, gloves, goggles, to the construction personnel, appropriate to materials in use. Make sure all containers, drums, and tanks that are used for storage are in good condition and label with an expiry date. Any container, drum, or tank that is dented, cracked, or rusted might eventually leak. Check for leakage regularly to identify potential problems before they occur. Store hazardous materials above flood plain level. |
| Construction activities        | Dust generation from construction sites, material stockpiles, and access roads is a nuisance in the environment and can be a health hazard. | Minimize the extent and period of exposure of the bare surfaces Reschedule earthwork activities or vegetation clearing activities, where practical, if necessary, to avoid periods of high wind and if visible dust is blowing off-site Water the material stockpiles & access roads on an as-required basis to minimize the production of dust. Increase the watering frequency during periods of high risk (e.g. High winds). Restore disturbed areas as soon as practicable by vegetation/grass-turfing                                                                                                                                                                                                                                                                                                                                                                                                  |
| Construction activity          | Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.                                   | Notify affected people if/when noisy activities will be undertaken Plan activities on-site and deliveries to and from site to minimize the impact. Monitor and analyze noise and vibration results and adjust construction practices as required. Notify adjacent residents prior to any typical noise event outside of daylight hours. Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions Employ the best available work practices on-site to minimize occupational noise levels. Avoid undertaking the noisiest activities at night near the residential areas                                                                                                                                                                                                                                                                    |
| Construction vehicular traffic | Increased noise levels in the project area                                                                                                  | Maintain all vehicles in accordance with manufactures maintenance procedures to ensure good working order. Make sure all drivers will comply with the traffic codes concerning the maximum speed limit, driving hours, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Construction machinery         | Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.                                   | Appropriately site all noise-generating activities to avoid noise pollution to local residents. Install acoustic enclosures around generators to reduce noise levels. Fit high-efficiency mufflers to appropriate construction equipment. Use the quietest available plant and equipment. Modify equipment to reduce noise (for example, noise control kits, the lining of truck trays). Maintain all vehicles in accordance with manufactures maintenance procedures to ensure good working order                                                                                                                                                                                                                                                                                                                                                                                                          |

ECOP for Flora

| Activity             | Environmental Impact                                                                                                                                                                                 | Environmental Management Guideline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vegetation clearance | Local flora is important to provide shelters for the fauna, offer fruits and/or timber/firewood and protect soil erosion. Such as damage to flora has a wide range of adverse environmental impacts. | Clear only the vegetation that needs to be cleared in accordance with the designs. These measures are applicable to both the construction areas as well as for any associated activities such as sites for stockpiles, disposal of fill and construction of diversion roads, etc. Do not burn cleared vegetation – where feasible, chip or mulch and reuse it for the rehabilitation of affected areas, temporary access tracks or landscaping. Mulch provides a seed source, can limit embankment erosion, retains soil moisture and nutrients, and encourages re-growth and protection from weeds. Reduce disturbance to surrounding vegetation. Use appropriate type and minimum size of the machine to avoid disturbance to adjacent vegetation. Get approval from the supervision consultant for the clearance of vegetation. Make selective and careful pruning of trees where possible to reduce the need for tree removal. Control noxious weeds by disposing of at a designated dump site or burn on site. Provide adequate knowledge to the workers regarding nature protection and the need to avoid felling trees during construction. Supply appropriate fuel in the work camps to prevent fuelwood collection. Return topsoil and mulched vegetation (in areas of native vegetation) to approximately the same area of the roadside it came from. Avoid work within the drip-line of trees to prevent damage to the tree roots and compacting the soil. |

ECOP for Fauna

| Activity                | Environmental Impact                                                                                                                                        | Environmental Management Guideline                                                                                                                                                                                                                                                                                                                         |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Construction activities | The location of construction activities can result in the loss of wildlife habitat and habitat quality. Impact on migratory birds, habitat and active nests | The Contractor is not permitted to destruct active nests or eggs of migratory birds. Minimize the release of oil, oil wastes or any other substances harmful to migratory birds to any waters or areas frequented by migratory birds.                                                                                                                      |
| Construction camps      | Illegal poaching                                                                                                                                            | Provide adequate knowledge to the workers regarding the protection of flora and fauna, and relevant government regulations and punishments for illegal poaching.                                                                                                                                                                                           |
| Vegetation clearance    | Clearance of vegetation may impact shelter, feeding and/or breeding and/or physical destruction and severing of habitat areas                               | Restrict the tree removal to the minimum required. Retain tree hollows on-site, where appropriate. Leave dead trees where possible as habitat for fauna. Fell the hollow-bearing trees in a manner that reduces the potential for fauna mortality. After felling, hollow trees will remain unmoved overnight to allow animals to move of their own accord. |

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Breeding Season & Nesting  | During earth works and vegetation clearance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p>The contractor environment officer shall survey the construction sites to eliminate the potential risk of any incident to any terrestrial, reptilian, mammals, fauna species prior to the construction works. On identification of any such nest (on ground or trees), the contractor shall immediately cease works in the area and inform the Engineer and PMU. The contractor shall erect a fence within 50ft of the nest and prohibit any works within this area until approved by the Engineer who shall arrange for an ecologist from Supervisory Consultant to visit the site and assess the impact. The contractor shall not fell a tree which houses an active nest or eggs. The breeding season of the following faunal species that are Vulnerable, Near Threatened and Protected are identified below:</p> <p><u>Avi-Fauna</u></p> <ul style="list-style-type: none"> <li>• Greter Spotted Eagle (<i>Aquila clanga</i>)-April and May</li> <li>• Houbara Bustard (<i>Chlamydotis undulata</i>)-March &amp; October</li> <li>• Black-tailed Godwit (<i>Limosa limosa</i>)-March to August</li> </ul> <p><u>Reptiles</u></p> <ul style="list-style-type: none"> <li>• Bengal Monitor (<i>Varanus bengalensis</i>)-June to September</li> <li>• Tortoise Afghan (<i>Testudo horsfieldii</i>)-May or June</li> </ul> <p><u>Mammals</u></p> <ul style="list-style-type: none"> <li>• Common Hill fox (<i>Vulpes vulpes</i>)- December or February</li> <li>• Chinkara (<i>Gazella bennetti</i>)-August to Ocotober &amp; March to April</li> </ul> |
| General construction works | <p>Construction works may pose health and safety risks to the construction workers and site visitors leading to severe injuries and deaths. The population in the proximity of the construction site and the construction workers will be exposed to a number of</p> <p>i) biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, wastewater, vector transmitted diseases, etc),</p> <p>ii) risk factors resulting from human behavior (e.g. STD, HIV, etc) and</p> <p>(iii) Road accidents</p> | <p>Implement suitable safety standards for all workers and site visitors, which should not be less than those laid down on the international standards (e.g. International Labor Office guideline on 'Safety and Health in Construction; World Bank Group's 'Environmental Health and Safety Guidelines') and contractor's own national standards or statutory regulations, in addition to complying with the national acts and rules of the Government of Pakistan. Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular construction activity and specific classes of hazards in the work areas, Provide personal protection equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty, and replacing damaged, PPE. Safety procedures include the provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job. Appoint an environment, health, and safety manager to look after the health and safety of the workers. Inform the local authorities responsible for health, religious and security before the commencement of civil works and establishment of construction camps so as to maintain</p>                                                                                                                                                                 |

|  |                            |                                                                                                                                                                                                                         |
|--|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | from construction traffic. | effective surveillance over public health, social and security matters. The Contractor shall follow the ECoPs presented in the following tables to reduce health risks to the construction workers and nearby community |
|--|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

ECoP for Traffic Management

| Activity                       | Environmental Impact                                                                                                                                                                                    | Environmental Management Guideline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Construction vehicular traffic | <p>Increased traffic use of roads by construction vehicles will affect the movement of normal road traffics and the safety of the road- users.</p> <p>Accidents and spillage of fuels and chemicals</p> | <p>Restrict truck deliveries, where practicable, today time working hours. Restrict the transport of oversize loads.</p> <p>Operate road traffics/transport vehicles, if possible, at non-peak periods to minimize traffic disruptions.</p> <p>Enforce on-site speed limit. Prepare and submit a traffic management plan to Supervisory Consultant for their approval.</p> <p>Include measures in the traffic management plan to ensure uninterrupted traffic movement during construction: detailed drawings of traffic arrangements showing all detours, temporary road, temporary diversions, necessary barricades, warning signs/lights, road signs, etc. Provide signs at strategic locations of the roads complying with the schedules of signs contained in the Pakistani Traffic Regulations. Install and maintain a display board at each important road intersection on the roads to be used during construction, which shall clearly show the following information in Urdu:</p> |

ECoP for Camp Management

| Activity                     | Environmental Impact                                                                                                                                                                                          | Environmental Management Guideline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety                       | Inadequate safety facilities at the construction camps may create security problems and fire hazards                                                                                                          | Provide appropriate security personnel (police /home guard or private security guards) and enclosures to prevent unauthorized entry into the camp area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                              |                                                                                                                                                                                                               | Maintain register to keep track of personnel present in the camp at any given time. Encourage the use of flameproof material for the construction of the labor housing/site office. Ensure that these houses/rooms are of sound construction and capable of withstanding storms/cyclones. Provide the appropriate type of firefighting equipment's suitable for the construction camps. Display emergency contact numbers clearly and prominently in strategic places in camps. Communicate the roles and responsibilities of labourers in case of an emergency in the monthly meetings with contractors.                                                                                                                                                                                                                                                                                                                                               |
| Construction Camp Facilities | Lack of proper infrastructure facilities, such as housing, water supply, and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards. | Adequate housing for all workers. Safe and reliable water supply. Water supply from tube wells that meets the national standards. Hygienic sanitary facilities and sewerage systems. Provide separate latrines and bathing places for males and females with total isolation by a wall or by location. Female toilets should be clearly marked in a language understood by the persons using them to avoid miscommunication. Treatment facilities for sewerage of toilet and domestic wastes Stormwater drainage facilities – shallow v drains should be provided on both sides of any camp roads to drain off stormwater. Pave the internal roads of at least haring-bond bricks to suppress dust and to work against a possible muddy surface during monsoon. Provide in-house community/common entertainment facilities. The dependence of local entertainment outlets by construction staff is to be discouraged/prohibited to the extent possible. |

|                   |                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disposal of waste | Management of wastes is crucial to minimize impacts on the environment, such as soil or water pollution. | Ensure proper collection and disposal of solid wastes within the construction camps. Encourage waste separation by source; organic wastes in one container and inorganic wastes in another container at the household level. Store inorganic wastes in a safe place within the household and clear organic wastes on a daily basis to waste collectors. Establish waste collection, transportation and disposal systems supported by adequate manpower and equipment/vehicles. Dispose of organic wastes in a designated safe place on a daily basis. At the end of the day cover the organic wastes with a thin layer of sand so that flies, mosquitoes, dogs, cats, rats, etc. are not attracted. Where waste is disposed of in a pit take care to protect groundwater from contamination by leachate formed due to decomposition. Cover the bed of the pit with an impervious layer of materials (clay, thin concrete) to protect groundwater from contamination. Locate the garbage pit/waste disposal site min 500 m away from the residence so that peoples are not disturbed with the odor likely to be produced from anaerobic decomposition of wastes at the waste dumping places. Encompass the waste dumping place with fencing to prevent access to children. Do not establish site-specific landfill sites. All solid waste will be collected and removed from the work camps and disposed of in the approval of waste disposal sites. |
|-------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## ANNEXURE: E

### CHANCE FIND PROCEDURE FOR CULTURAL HERITAGE FINDS

Chance Find Procedures Project may involve excavations. Therefore, the possibility of chance find is not ignorable. In case of any chance find, the contractor will immediately report through Supervision Consultant to DG Directorate General of Archaeology, Balochistan and Project Director of PMU/PIU, to take further suitable action to preserve those antique or sensitive remains. Representative of the Director will visit the site and observe the significance of the antique, artefact and Cultural (religious) properties and significance of the project. The report will be prepared by representative and will be given to the Director. The documentation will be completed and if required suitable action will be taken to preserve those antiques and sensitive remains. In case any artefact, antiques and sensitive remains are discovered, chance find procedures should be adopted by contractor workers as follows:

- Stop the construction activities in the areas of chance find.
- After stopping work, the contractor must immediately report the discovery to the Supervision Consultant.
- The Director decides to take over the antiquity for purposes of custody, preservation and protection, the person discovering or finding it shall hand it over to the Director or a person authorized by him in writing.
- Delineate the discovered site or area.
- Consult with the local community and provincial Archaeological Department.
- The Director shall, constitute a team of archaeologists for undertaking preliminary investigation and will decide about further course of action in light of findings of the team.
- The suggestion of the local communities and the concerned authorities will be suitably incorporated during taking the preventive measures to conserve the antique, artefact and cultural (religious) properties; and Secure the site to prevent any damage or loss of removable objects. In case of removable antiquities or sensitive remain, a night guard shall be arranged until the responsible local authorities take over.
- Avoid the use of heavy construction machinery during the excavation process.
- The Contractor staff must have relevant qualification and experience of similar projects.
- Plaster and Painting Works: New Plaster, painting walls and other roof treatment should consider the original color scheme, layout and design to keep the aesthetic and visual impact of the site. Operational Phase: The authority responsible for the O & M of sub project activities will be responsible for housekeeping of the facilities and shall prepare and adopt SOPs for O & M of the subproject facilities. E&S experts/specialists will ensure that O&M plan is operationalized and will do monitoring visits for compliance of O & M plans.
- Training and Capacity Building: The civil work activities shall be carried out by Pre-qualified trained Contractor under supervision of technical staff. The Contractors shall contain team of skilled labors having past experience in similar works. Trainings of the work force should be conducted before start of civil works and during project implementation by the PIU safeguards specialists and Contractor's.
- Monitoring and Supervision: Strict Monitoring and supervision as per monitoring plan given in ESMP should be enforced during works.
- GRM: The record of any complaints as per GRM mechanism of the project should be implemented.

**ANNEXURE: F****FORMAT OF A MONTHLY MONITORING REPORT****Scope of Works**

Provide a summary regarding the engineering activities

**Summary of non-compliances**

This section summaries the findings of the Environmental Management Plan (ESMP) compliance monitoring completed by the supervisory consultant under this project.

**Summary of Action Required**

Summary of Non-compliances

| <b>S. No</b> | <b>Non-Compliances</b>                            | <b>Actions Required</b>                    | <b>ending Since</b>             | <b>Status of Previous Month Non-compliances</b>             |
|--------------|---------------------------------------------------|--------------------------------------------|---------------------------------|-------------------------------------------------------------|
| 1            | <i>Include Particular Non-Compliance Observed</i> | <i>Include Action Require, as per ESMP</i> | <i>Include Number of Months</i> | <i>Include so far progress made from the previous month</i> |
|              | ----                                              | ---                                        | ---                             | ----                                                        |

**Historical Review of Non-Compliances**

So far, the progress made and issues resolved by the contractor include a graph of the past three months. (Percentage Non-Compliance evaluated from monthly monitoring checklist)

**Non-Compliances**

Include specific social, Environmental Health and Safety Non-Compliances observed during the monitoring month

Provide Specific Non-Compliance (With Status)

- Provide details
- Provide Photographs

**Action Required**

- Provide a list of action required

ANNEXURE: G

CERTIFICATE OF ENVIRONMENTAL MONITORING LAB



GRES-JV-SES



Reference No: GRES-SES-JV/IFRAP/31

Date: 30<sup>th</sup> October, 2025

FOR INTEGRATED FLOOD RESILIENCE AND ADPATION DEVELOPMENT PROJECT (IFRAP)

This is to certify that the Green Environmental Services Private Limited (GRES) JV Sustainable Environmental Services (SES) Karachi has been conducted environmental baseline testing studies for the different schemes regarding Environmental and Social Management Plan & Checklist. The samples were collected in October 2025. The scope of Monitoring Activities by GRES-JV-SES follows:

| Baseline Sampling Ambient Air, Noise, Surface Water and Ground Water |                                                                                    |             |       |               |              |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------|-------|---------------|--------------|
| S. No                                                                | Project Site                                                                       | Ambient Air | Noise | Surface Water | Ground Water |
| 1                                                                    | Reconstruction of flood protection band near Zain ul Abideen Khan Khos, Sohbat Pur | 01          | 01    | 01            | 01           |

The Baseline Environmental Monitoring sampling as per above mentioned scope has been conducted by GRES JV SES as per requirement of the project. A comprehensive report of test conducted along with analysis and conclusion has been submitted to CAMEOS Consultant, Quetta Office.

Name: Zafarullah Channa  
(Party of the first Part)

Signature: \_\_\_\_\_



Name: Zeeshan Khan  
(Party of the second Part)

Signature: \_\_\_\_\_



HEAD OFFICE

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NEW HEAD OFFICE-LAB

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## ANNEXURE: H

**E&S RISK SCREENING TABLE (as per ESS1 & ESS4)**

*(This should be included as a technical annex to the Preliminary Site Assessment Report)*

**Purpose:** To screen sub-projects for potential environmental and social (E&S) risks and determine the level of assessment required during detailed design.

**Preliminary Site Assessment Report**

| No. | Sub-Project Name                           | District                     | Type             | Key Environmental Risks                    | Key Social Risks                                      | Proposed Mitigation / Management Measures                             | Preliminary Risk Category (Low / Moderate / Substantial / High) |
|-----|--------------------------------------------|------------------------------|------------------|--------------------------------------------|-------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------|
| 1   | Zain ul Abideen khan Flood Protection Bund | PKG-V – Sohbat pur District: | Flood Protection | Sediment inflow, erosion, disposal of silt | Temporary land use for construction, community safety | Design silt trap, use borrow area rehabilitation plan, safety signage | Moderate                                                        |
|     |                                            |                              |                  | Earth bund construction                    | Access disturbance for farmers                        | Timing of works, maintain access paths                                | Low                                                             |
|     |                                            |                              |                  | Waste generation                           |                                                       | Water sprinkling, gabion mesh coating                                 | Low                                                             |
|     |                                            |                              |                  | Dust emissions                             | Labor influx, GBV risk                                | Controlled spoil disposal, labor code of conduct                      | Moderate                                                        |
|     |                                            |                              |                  | PPEs                                       |                                                       | Community awareness & fencing                                         | Moderate                                                        |

**Summary:**

- No major irreversible environmental or social impacts anticipated.
- All identified risks are manageable through CESMPs during design.
- PIU to coordinate with Environmental and Social Specialists for final risk classification in the next phase

ANNEXURE: I

LAB TEST REPORTS (WATER QUALITY, AIR QUALITY & NOISE RECORD)



## Sustainable Environmental Services

SES

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**Analysis Report**

**Ref# SES/Env/OCT/25/2926/3816-A**

**Date: 28-10-2025**

**Description:**

|                      |                                                                                   |                    |                                 |
|----------------------|-----------------------------------------------------------------------------------|--------------------|---------------------------------|
| Job Location:        | SOHBAT PUR                                                                        | Testing Instrument | 24 Hours Air Monitoring Station |
| Job Performed By:    | Mr. Mohsin                                                                        | Job Date :         | 24-10-2025 to 25-10-2025        |
| Monitoring Duration: | (10:00 AM To 09:00 AM) 24 Hrs.                                                    |                    |                                 |
| Project:             | Integrated Flood Resilience And Adaption Development Project (IFRAP)              |                    |                                 |
| Site Location:       | Reconstruction of Flood Protection Band Near Zain ul Abideen Khan Khos(PACKAGE-V) |                    |                                 |
| Client Name :        | CAMEOS CONSULTANT, QUETTA OFFICE                                                  |                    |                                 |

### Air Quality Test Report

| Parameters        | Temp | NO                                 | NO <sub>2</sub>                    | SO <sub>2</sub>                     | CO                                | PM <sub>2.5</sub>                  | PM <sub>10</sub>                    | SPM                                 | O <sub>3</sub>                         |
|-------------------|------|------------------------------------|------------------------------------|-------------------------------------|-----------------------------------|------------------------------------|-------------------------------------|-------------------------------------|----------------------------------------|
| NEQS & BEQS Limit | -    | 24 hrs.<br>(40 µg/m <sup>3</sup> ) | 24 hrs.<br>(80 µg/m <sup>3</sup> ) | 24 hrs.<br>(120 µg/m <sup>3</sup> ) | 08 hrs.<br>(5 mg/m <sup>3</sup> ) | 24 hrs.<br>(35 µg/m <sup>3</sup> ) | 24 hrs.<br>(150 µg/m <sup>3</sup> ) | 24 hrs.<br>(500 µg/m <sup>3</sup> ) | 01 hr.<br>(130 µg/m <sup>3</sup> )     |
| WHO Limit         | -    | -                                  | 24 hrs.<br>(25 µg/m <sup>3</sup> ) | 24 hrs.<br>(40 µg/m <sup>3</sup> )  | 08 hrs.<br>(4 mg/m <sup>3</sup> ) | 24 hrs.<br>(15 µg/m <sup>3</sup> ) | 24 hrs.<br>(45 µg/m <sup>3</sup> )  | -                                   | Peak Season<br>(60 µg/m <sup>3</sup> ) |

| Time    | Temp   | NO   | NO <sub>2</sub> | SO <sub>2</sub> | CO     | PM <sub>2.5</sub> | PM <sub>10</sub> | SPM   | O <sub>3</sub> |
|---------|--------|------|-----------------|-----------------|--------|-------------------|------------------|-------|----------------|
| 10:00AM | 35°C   | 19.3 | 34.1            | 5.35            | 0.061  | 25.8              | 89.2             | 115.0 | 06             |
| 11:00AM | 35°C   | 16.8 | 36.7            | 4.61            |        | 22.6              | 92.3             | 114.9 | -              |
| 12:00PM | 35°C   | 19.0 | 37.2            | 4.39            |        | 25.0              | 105.1            | 130.1 | -              |
| 01:00PM | 35°C   | 20.2 | 39.8            | 6.50            | 0.036  | 28.9              | 96.9             | 125.8 | -              |
| 02:00PM | 34°C   | 16.5 | 34.9            | 5.61            |        | 26.3              | 87.1             | 113.4 | -              |
| 03:00PM | 35°C   | 18.1 | 40.5            | 5.27            |        | 27.7              | 110.8            | 138.5 | -              |
| 04:00PM | 37°C   | 17.1 | 37.6            | 6.81            | 0.042  | 29.5              | 133.4            | 162.9 | -              |
| 05:00PM | 36°C   | 19.0 | 38.3            | 5.32            |        | 27.4              | 103.2            | 130.6 | -              |
| 06:00PM | 35°C   | 15.2 | 33.1            | 4.61            |        | 25.6              | 101.1            | 126.7 | -              |
| 07:00PM | 35°C   | 13.5 | 27.4            | 7.61            | 0.041  | 26.1              | 86.5             | 112.6 | -              |
| 08:00PM | 29°C   | 12.7 | 28.8            | 4.28            |        | 28.3              | 88.9             | 117.2 | -              |
| 09:00PM | 28°C   | 11.4 | 29.3            | 6.19            |        | 30.1              | 89.8             | 119.9 | -              |
| 10:00PM | 27°C   | 12.5 | 40.0            | 4.38            | 0.033  | 28.6              | 91.7             | 120.3 | -              |
| 11:00PM | 25°C   | 10.4 | 28.6            | 5.87            |        | 28.9              | 79.9             | 108.8 | -              |
| 12:00AM | 26°C   | 9.6  | 25.9            | 5.10            |        | 29.3              | 78.8             | 108.1 | -              |
| 01:00AM | 29°C   | 10.8 | 27.8            | 4.91            | 0.031  | 26.7              | 55.0             | 81.7  | -              |
| 02:00AM | 28°C   | 9.7  | 31.2            | 4.26            |        | 26.9              | 82.1             | 109.0 | -              |
| 03:00AM | 27°C   | 8.2  | 25.3            | 5.31            |        | 30.5              | 69.7             | 100.2 | -              |
| 04:00AM | 28°C   | 7.5  | 27.9            | 6.91            | 0.049  | 28.7              | 67.4             | 96.1  | -              |
| 05:00AM | 26°C   | 8.6  | 26.4            | 6.19            |        | 29.8              | 78.5             | 108.3 | -              |
| 06:00AM | 27°C   | 9.3  | 27.5            | 6.13            |        | 24.5              | 35.2             | 59.7  | -              |
| 07:00AM | 28°C   | 11.5 | 30.7            | 5.91            | 0.036  | 27.1              | 65.9             | 93.0  | -              |
| 08:00AM | 29°C   | 13.2 | 25.1            | 4.32            |        | 26.3              | 69.5             | 95.8  | -              |
| 09:00AM | 29°C   | 12.1 | 28.4            | 5.91            |        | 28.2              | 71.8             | 100.0 | -              |
| AVERAGE | 30.7°C | 13.3 | 31.60           | 5.49            | 0.0144 | 27.3              | 86.0             | 114.4 | 06             |









New Head Office: Plot No. SC-46

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Sustainable Environmental Services

SES

**Analysis Report**

Ref # SES/Env/OCT/25/2926/3816-B

Date: 28-10-2025

**Description:**

|                      |                                                                                   |                    |                                 |
|----------------------|-----------------------------------------------------------------------------------|--------------------|---------------------------------|
| Job Location:        | SOHBA PUR                                                                         | Testing Instrument | 24 Hours Air Monitoring Station |
| Job Performed By:    | Mr. Mohsin                                                                        | Job Date :         | 24-10-2025 to 25-10-2025        |
| Monitoring Duration: | (10:00 AM To 09:00 AM) 24 Hrs.                                                    |                    |                                 |
| Project:             | Integrated Flood Resilience And Adaption Development Project (IFRAP)              |                    |                                 |
| Site Location:       | Reconstruction of Flood Protection Band Near Zain ul Abideen Khan Khos(PACKAGE-V) |                    |                                 |
| Client Name :        | CAMEOS CONSULTANT, QUETTA OFFICE                                                  |                    |                                 |

**Ambient Air Quality Monitoring**

| Sr. | Measuring Parameters                    | Unit              | WHO Limit       | NEQS & BEQS Limits | Average Test Result | Remarks |
|-----|-----------------------------------------|-------------------|-----------------|--------------------|---------------------|---------|
| 1.  | Oxide Of Nitrogen as (NO)               | µg/m <sup>3</sup> | -               | 40 (24 hrs.)       | 12.3                | WL      |
| 2.  | Oxide Of Nitrogen as (NO <sub>2</sub> ) | µg/m <sup>3</sup> | 25(24 hrs.)     | 80 (24 hrs.)       | 31.60               | WL      |
| 3.  | Sulphur Dioxide (SO <sub>2</sub> )      | µg/m <sup>3</sup> | 40(24 hrs.)     | 120 (24 hrs.)      | 5.49                | WL      |
| 4.  | Carbon Monoxide (CO)                    | mg/m <sup>3</sup> | 4(24 hrs.)      | 5 (08 hrs.)        | 0.0144              | WL      |
| 5.  | Particulate Matter (PM 2.5)             | µg/m <sup>3</sup> | 15(24 hrs.)     | 35 (24 hrs.)       | 27.3                | WL      |
| 6.  | Particulate Matter (PM 10)              | µg/m <sup>3</sup> | 45(24 hrs.)     | 150 (24 hrs.)      | 86.0                | WL      |
| 7.  | SPM                                     | µg/m <sup>3</sup> | -               | 500 (24 hrs.)      | 114.4               | WL      |
| 8.  | Ozone (O <sub>3</sub> )                 | µg/m <sup>3</sup> | 60(Peak Season) | 130 (01 hr.)       | 6                   | WL      |

**Note:**

BEQS-Baluchistan Environmental Quality Standards  
The instruments used were duly calibrated.  
The measurements were carried out on client's request.  
The client is responsible for lawful usage of reported data in future  
This report is not valid for Court evidence/ Judicial knowledge  
The measurement results based on the time of monitoring  
WL= Within Limit

Field Analyst:

Chief Chemist:



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Sustainable Environmental Services

SES

Analysis Report

Ref # SES/Env/OCT/25/2926/3816-C

Date: 28-10-2025

Description:

|                      |                                                                                   |                     |                          |
|----------------------|-----------------------------------------------------------------------------------|---------------------|--------------------------|
| Job Location:        | SOHBAT PUR                                                                        | Testing Instrument: | Noise Meter              |
| Job Performed By:    | Mr. Mohsin                                                                        | Job Location :      | 24-10-2025 to 25-10-2025 |
| Monitoring Duration: | (10:00 AM To 09:00 AM) 24 Hrs.                                                    |                     |                          |
| Project:             | Integrated Flood Resilience And Adaption Development Project (IFRAP)              |                     |                          |
| Site Location:       | Reconstruction of Flood Protection Band Near Zain ul Abideen Khan Khos(PACKAGE-V) |                     |                          |
| Client Name :        | CAMEOS Consultant, Quetta Office                                                  |                     |                          |

Noise Test Report

| S. No          | Measuring Parameter | Testing Instrument | WHO Limit                | NEQS & BEQS Limits       | TIME    | Results |
|----------------|---------------------|--------------------|--------------------------|--------------------------|---------|---------|
| 01             | Noise Level         | Noise Meter        | 65 dB(A)<br>(Day time)   | 75 dB(A)<br>(Day time)   | 10:00AM | 62.5    |
| 02             |                     |                    |                          |                          | 11:00AM | 57.3    |
| 03             |                     |                    |                          |                          | 12:00PM | 60.5    |
| 04             |                     |                    |                          |                          | 01:00PM | 64.8    |
| 05             |                     |                    |                          |                          | 02:00PM | 64.0    |
| 06             |                     |                    |                          |                          | 03:00PM | 65.2    |
| 07             |                     |                    |                          |                          | 04:00PM | 61.8    |
| 08             |                     |                    |                          |                          | 05:00PM | 63.2    |
| 09             |                     |                    |                          |                          | 06:00PM | 62.7    |
| 10             |                     |                    |                          |                          | 07:00PM | 59.8    |
| 11             |                     |                    |                          |                          | 08:00PM | 63.4    |
| 12             |                     |                    |                          |                          | 09:00PM | 62.9    |
| 13             |                     |                    | 10:00PM                  | 56.7                     |         |         |
| 14             |                     |                    | 11:00PM                  | 54.0                     |         |         |
| 15             |                     |                    | 12:00AM                  | 54.9                     |         |         |
| 16             |                     |                    | 55 dB(A)<br>(Night time) | 65 dB(A)<br>(Night time) | 01:00AM | 56.1    |
| 17             |                     |                    |                          |                          | 02:00AM | 52.8    |
| 18             |                     |                    |                          |                          | 03:00AM | 50.4    |
| 19             |                     |                    |                          |                          | 04:00AM | 53.5    |
| 20             |                     |                    |                          |                          | 05:00AM | 51.7    |
| 21             |                     |                    |                          |                          | 06:00AM | 53.0    |
| 22             |                     |                    | 65 dB(A)<br>(Day time)   | 75 dB(A)<br>(Day time)   | 07:00AM | 51.9    |
| 23             |                     |                    |                          |                          | 08:00AM | 60.9    |
| 24             |                     |                    |                          |                          | 09:00AM | 57.8    |
| Average Result |                     |                    |                          |                          |         | 57.9    |

Note:

BEQS-Baluchistan Environmental Quality Standards  
The instruments used were duly calibrated.  
The measurements were carried out on client's request.  
The client is responsible for lawful usage of reported data in future.  
This report is not valid for Court evidences/ legal purpose.  
The measurement results based on the following conditions:  
WL- Within Limit

Field Analyst:

Mr. Mohsin

Chief Chemist:



New Head Office: Plot No SC-46 Block Commercial Sector 31/D P&T Society Korangi, Karachi.  
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# Sustainable Environmental Services

SES

## Analysis Report

Ref # SES/Env/OCT/25/2926/3816-D

Date: 28-10-2025

### Description:

|                    |                                                                                   |                      |      |          |              |
|--------------------|-----------------------------------------------------------------------------------|----------------------|------|----------|--------------|
| Quantity of sample | 1.0 Liter                                                                         | Sampling Methodology | Grab | Job Date | 24-10-2025   |
| Analysis Type      | Chemical Analysis                                                                 | Sampling Location    |      |          | Project Site |
| Project:           | Integrated Flood Resilience And Adaption Development Project (IFRAP)              |                      |      |          |              |
| Site Location:     | Reconstruction of Flood Protection Band Near Zain ul Abideen Khan Khos(PACKAGE-V) |                      |      |          |              |
| Client Name :      | CAMFOS CONSULTANT, QUETTA OFFICE                                                  |                      |      |          |              |

### Surface Water Report

| S # | Parameters            | Units                                | Testing Method                             | NEQS Limits | WHO Limits  | BEQS Limits | Result  | Remarks |
|-----|-----------------------|--------------------------------------|--------------------------------------------|-------------|-------------|-------------|---------|---------|
| 01  | Total Bacteria Count  | TBC (count/ml)                       | Total Viable Count                         | -----       | -----       | -----       | 7.3     |         |
| 02  | Total Coliform        | TC (count/ml)                        | APIA 922 B                                 | 0/100 ml    | 0/100 ml    | 0/100 ml    | ND      | WL      |
| 03  | F-Coli                | FC(count/ml)                         | Total Viable Count                         | 0/100 ml    | 0/100 ml    | 0/100 ml    | ND      | WL      |
| 04  | Faecal Coli           | FC (count/ml)                        | APIA 922 B                                 | 0/100 ml    | 0/100 ml    | 0/100 ml    | ND      | WL      |
| 05  | Turbidity             | NTU                                  | HACH Turbidity meter                       | <5          | <15         | <15         | <0.07   | WL      |
| 06  | Taste                 | Taste                                | Sensory Evolution                          | Obj/Non Obj | Obj/Non Obj | Obj/Non Obj | Non-obj | WL      |
| 07  | Odor                  | Odor                                 | Sensory Evynton                            | Obj/Non Obj | Obj/Non Obj | Obj/Non Obj | Non-obj | WL      |
| 08  | Colour                | PCU                                  | Pt Co method                               | ≤ 15 PCU    | ≤ 15 PCU    | ≤ 15 PCU    | <2.7    | WL      |
| 09  | Phenolic Compounds    | As Phenol (mg/L)                     | ASTM D-1783                                | -           | -           | -           | ND      | WL      |
| 10  | Residual Chlorine     | CL <sub>2</sub> (mg/L)               | HACH Method 8167                           | 0.2-0.5     | -           | 0.2-0.5     | 0.69    | WL      |
| 11  | pH @ 25 °C            | PH                                   | ASTM D-1293                                | 6.5 to 8.5  | 6.5 to 8.5  | 6.5 to 8.5  | 8.13    | WL      |
| 12  | Total Dissolved Solid | TDS (mg/l)                           | APIA 2540-C                                | < 1000      | < 1000      | < 1000      | 313     | WL      |
| 13  | Total Hardness        | As CaCO <sub>3</sub> (mg/L)          | APIA 2340-C                                | < 500       | -           | < 500       | 89.1    | WL      |
| 14  | Fluoride              | F <sup>-1</sup> (mg/L)               | APHA 4500-F <sup>-1</sup>                  | <1.5        | 1.5         | ≤ 1.5       | 0.89    | WL      |
| 15  | Chloride              | Cl <sup>-2</sup> (mg/L)              | APHA 4500-Cl <sup>-1</sup>                 | < 250       | 250         | < 250       | 181     | WL      |
| 16  | Cyanide               | CN <sup>-2</sup> (mg/L)              | HACH Method 8027                           | < 0.05      | 0.02        | ≤ 0.05      | ND      | WL      |
| 17  | Nitrate               | NO <sub>3</sub> <sup>-1</sup> (mg/L) | HACH Method 8192                           | ≤ 30        | 50          | ≤ 50        | 0.14    | WL      |
| 18  | Nitrite               | NO <sub>2</sub> <sup>-1</sup> (mg/L) | APHA 4500-NO <sub>2</sub> <sup>-1</sup> .B | ≤ 3.0(P)    | 3           | ≤ 3.0(P)    | 0.10    | WL      |
| 19  | Antimony              | Sb (mg/L)                            | ASTM D-3687                                | ≤ 0.005     | 0.02        | ≤ 0.005     | ND      | WL      |
| 20  | Aluminium             | Al(mg/L)                             | ASTM D-857                                 | ≤ 0.2       | 0.2         | ≤ 0.2       | 0.13    | WL      |
| 21  | Arsenic               | As (mg/L)                            | ASTM D-2972                                | ≤ 0.05      | 0.01        | < 0.05      | ND      | WL      |
| 22  | Boron                 | B (mg/L)                             | ASTM D-3082                                | 0.3         | 0.3         | 0.3         | ND      | WL      |
| 23  | Barium                | Ba(mg/L)                             | ASTM D-4382                                | 0.7         | 0.7         | 0.7         | 0.012   | WL      |
| 24  | Chromium Total        | Cr(mg/L)                             | ASTM D-1687                                | ≤ 0.05      | 0.05        | ≤ 0.05      | ND      | WL      |
| 25  | Copper                | Cu (mg/L)                            | ASTM D 1688                                | ?           | ?           | ?           | <0.07   | WL      |
| 26  | Cadmium               | Cd(mg/L)                             | ASTM D-3557                                | 0.01        | 0.003       | 0.01        | ND      | WL      |
| 27  | Lead                  | Pb(mg/L)                             | ASTM D-3559                                | ≤ 0.05      | 0.01        | ≤ 0.05      | ND      | WL      |
| 28  | Manganese             | Mn(mg/L)                             | ASTM D-835                                 | ≤ 0.5       | 0.5         | ≤ 0.5       | ND      | WL      |
| 29  | Mercury               | Hg (mg/L)                            | ASTM D-3223                                | ≤ 0.001     | 0.001       | < 0.001     | ND      | WL      |
| 30  | Nickel                | Ni(mg/L)                             | ASTM D-3866                                | ≤ 0.02      | 0.02        | < 0.05      | ND      | WL      |
| 31  | Selenium              | Se(mg/L)                             | ASTM D-3838                                | 0.01        | 0.01        | 0.01        | 0.07    | WL      |
| 32  | Zinc                  | Zn (mg/L)                            | ASTM D-1691                                | 5           | 3           | 5           | 7.2     | WL      |

### Note:

BEQS-Baluchistan Environmental Quality Standards  
The instruments used were duly calibrated.  
The measurements were carried out on client's request.  
The client is responsible for lawful usage of reported data in future.  
This report is not valid for Court evidence/ Judicial knowledge.  
The measurement results based on the time of monitoring.  
WL - Within Limit

Field Analyst:

Mr. Mohsin

Chief Chemist:



New Head Office: Plot No SC-46 Block Commercial Sector 31/D P&T Society Korangi, Karachi.  
Mob: +92(0)346-2225261, 0333-2699016 Tel # 02135121125 E-mail: info@sescpaklab.com Web: www.sescpaklab.com



# Sustainable Environmental Services

SES

## Analysis Report

Ref # SES/Env/OCT/25/2926/3816-D

Date: 28-10-2025

|                    |                                                                                   |                      |                   |              |            |
|--------------------|-----------------------------------------------------------------------------------|----------------------|-------------------|--------------|------------|
| Description:       |                                                                                   |                      |                   |              |            |
| Quantity of sample | 1.0 Liter                                                                         | Sampling Methodology | Grab              | Job Date     | 24-10-2025 |
| Analysis Type      | Chemical Analysis                                                                 |                      | Sampling Location | Project Site |            |
| Project:           | Integrated Flood Resilience And Adpation Development Project (IFRAP))             |                      |                   |              |            |
| Site Location:     | Reconstruction of Flood Protection Band Near Zain ul Abideen Khan Khos(PACKAGE-V) |                      |                   |              |            |
| Client Name :      | CAMEOS CONSULTANT, QUETTA OFFICE                                                  |                      |                   |              |            |

## Surface Water Report

| S # | Parameters            | Units                                | Testing Method                             | NEQS Limits | WHO Limits  | BEQS Limits | Result  | Remarks |
|-----|-----------------------|--------------------------------------|--------------------------------------------|-------------|-------------|-------------|---------|---------|
| 01  | Total Bacteria Count  | TBC (count/ml)                       | Total Viable Count                         | -----       | -----       | -----       | 05      | -       |
| 02  | Total Coliform        | TC (count/ml)                        | APHA 922 B                                 | 0/100 ml    | 0/100 ml    | 0/100 ml    | 285     | OL      |
| 03  | E-Coli                | EC(count/ml)                         | Total Viable Count                         | 0/100 ml    | 0/100 ml    | 0/100 ml    | 79      | OL      |
| 04  | Facial Coli           | FC (count/ml)                        | APHA 922 B                                 | 0/100 ml    | 0/100 ml    | 0/100 ml    | 168     | OL      |
| 05  | Turbidity             | NTU                                  | HACH Turbidity meter                       | <5          | <15         | <15         | <0.07   | WL      |
| 06  | Taste                 | Taste                                | Sensory Evolution                          | Obj/Non Obj | Obj/Non Obj | Obj/Non Obj | Non-obj | WL      |
| 07  | Odour                 | Odor                                 | Sensory Evolution                          | Obj/Non Obj | Obj/Non Obj | Obj/Non Obj | Non-obj | WL      |
| 08  | Colour                | TCU                                  | Pt-Co method                               | ≤ 15 TCU    | ≤ 15 TCU    | ≤ 15 TCU    | <2.7    | WL      |
| 09  | Phenolic Compounds    | As Phenol (mg/L)                     | ASTM D-1783                                | -           | -           | -           | ND      | WL      |
| 10  | Residual chlorine     | Cl <sub>2</sub> (mg/L)               | HACH Method 8167                           | 0.2-0.5     | -           | 0.2-0.5     | 0.3     | WL      |
| 11  | pH @ 25 °C            | PH                                   | ASTM D-1293                                | 6.5 to 8.5  | 6.5 to 8.5  | 6.5 to 8.5  | 8.13    | WL      |
| 12  | Total Dissolved Solid | TDS (mg/L)                           | APHA 2540-C                                | < 1000      | < 1000      | < 1000      | 313     | WL      |
| 13  | Total Hardness        | As COCO <sub>3</sub> (mg/L)          | APHA 2340-C                                | < 500       | -           | < 500       | 89.5    | WL      |
| 14  | Fluoride              | F <sup>-1</sup> (mg/L)               | APHA 4500-F <sup>-1</sup>                  | ≤ 1.5       | 1.5         | ≤ 1.5       | 0.49    | WL      |
| 15  | Chloride              | Cl <sup>-1</sup> (mg/L)              | APHA 4500-Cl <sup>-1</sup>                 | < 250       | 250         | < 250       | 181     | WL      |
| 16  | Cyanide               | CN <sup>-1</sup> (mg/L)              | HACH Method 8027                           | ≤ 0.05      | 0.07        | ≤ 0.05      | ND      | WL      |
| 17  | Nitrate               | NO <sub>3</sub> <sup>-1</sup> (mg/L) | HACH Method 8192                           | ≤ 50        | 50          | ≤ 50        | 0.14    | WL      |
| 18  | Nitrite               | NO <sub>2</sub> <sup>-1</sup> (mg/L) | APHA 4500-NO <sub>2</sub> <sup>-1</sup> -B | ≤ 3.0(P)    | 3           | ≤ 3.0(P)    | 0.10    | WL      |
| 19  | Antimony              | Sb (mg/L)                            | ASTM D-3697                                | ≤ 0.005     | 0.02        | ≤ 0.005     | ND      | WL      |
| 20  | Aluminum              | Al(mg/L)                             | ASTM D-857                                 | ≤ 0.2       | 0.2         | ≤ 0.2       | 0.13    | WL      |
| 21  | Arsenic               | As (mg/L)                            | ASTM D-2972                                | ≤ 0.05      | 0.01        | ≤ 0.05      | ND      | WL      |
| 22  | Boron                 | B (mg/L)                             | ASTM D-3082                                | 0.3         | 0.3         | 0.3         | ND      | WL      |
| 23  | Barium                | Ba(mg/L)                             | ASTM D-4382                                | 0.7         | 0.7         | 0.7         | 0.012   | WL      |
| 24  | Chromium Total        | Cr(mg/L)                             | ASTM D-1687                                | ≤ 0.05      | 0.05        | ≤ 0.05      | ND      | WL      |
| 25  | Copper                | Cu (mg/L)                            | ASTM D-1688                                | 2           | 2           | 2           | <0.07   | WL      |
| 26  | Cadmium               | Cd(mg/L)                             | ASTM D-3557                                | 0.01        | 0.003       | 0.01        | ND      | WL      |
| 27  | Lead                  | Pb(mg/L)                             | ASTM D-3559                                | ≤ 0.05      | 0.01        | ≤ 0.05      | ND      | WL      |
| 28  | Manganese             | Mn(mg/L)                             | ASTM D-858                                 | ≤ 0.5       | 0.5         | ≤ 0.5       | ND      | WL      |
| 29  | Mercury               | Hg (mg/L)                            | ASTM D-3223                                | ≤ 0.001     | 0.001       | ≤ 0.001     | ND      | WL      |
| 30  | Nickel                | Ni(mg/L)                             | ASTM D-3866                                | ≤ 0.02      | 0.02        | ≤ 0.05      | ND      | WL      |
| 31  | Selenium              | Se(mg/L)                             | ASTM D-3858                                | 0.01        | 0.01        | 0.01        | 0.07    | WL      |
| 32  | Zinc                  | Zn (mg/L)                            | ASTM D-1691                                | 5           | 3           | 5           | 7.2     | WL      |

## Note:

BEQS=Baluchistan Environmental Quality Standards  
The instruments used were dully calibrated.  
The measurements were carried out on client's request.  
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The measurement results based on the time of monitoring.  
WL= Within Limit

Field Analyst:

Mr. Mohsin

Chief Chemist:

Kasim



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## ANNEXURE: J

**GENDER ACTION PLAN (GAP)****Flood Resilience and Adaptation Project-(IFRAP) Component-1****1. Introduction**

The 2022 floods in Balochistan disproportionately affected women and girls due to pre-existing gender inequalities, socioeconomic vulnerabilities, and limited access to resources. The Integrated Flood Resilience and Adaptation Project (IFRAP) seek to address these challenges through **Component 1**, which focuses on resilient infrastructure, community preparedness, and institutional strengthening. This **Gender Action Plan (GAP)** ensures that gender equality and women's empowerment are systematically integrated into Component 1 interventions, in line with the World Bank Gender Strategy, Environmental and Social Framework (ESF), PDNA, and the Resilient Recovery, Rehabilitation, and Reconstruction Framework (4RF).

**2. Objectives of the Gender Action Plan**

This Gender Action Plan (GAP) for Component 1 is prepared in accordance with the World Bank Environmental and Social Framework (ESF) and Environmental and Social Standards (ESS1–ESS10).

**Specific Objectives**

- It aims to ensure meaningful participation and leadership of women in project planning, implementation, and monitoring.
- Enhance women's access to gender-responsive infrastructure, services, and disaster risk management systems.
- Strengthen institutional capacity for gender-sensitive and inclusive project implementation.
- Reduce gender-based vulnerabilities and strengthen safeguards, including prevention of SEA/SH.
- Establish clear indicators and monitoring mechanisms for gender accountability.

**3. Key Gender Issues in Component 1**

- Limited participation of women in community-level disaster risk management and decision-making bodies.
- Inadequate consideration of women's needs in flood-resilient infrastructure and service delivery.
- Barriers to women's access to early warning information and disaster preparedness systems.
- Weak institutional capacity for gender mainstreaming and GBV risk mitigation.
- Lower literacy rates among women limit access to written project information.

**Gender Action Matrix**

| Strategic Area                                         | Activities                                                                                                                                                                                   | Indicators                                                                                                                      | Targets                                                                                                                          | Responsibility                       | Timeline           |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------|
| <b>Institutional Strengthening &amp; Participation</b> | <ul style="list-style-type: none"> <li>• Ensure at least 40% women's representation in community-level FGDs and Consultations.</li> <li>• Provide gender-sensitivity, SEA/SH, and</li> </ul> | <ul style="list-style-type: none"> <li>• 40% women in DRMCs.</li> <li>• of personnel trained (gender-disaggregated).</li> </ul> | <ul style="list-style-type: none"> <li>• 40% women representation.</li> <li>• 100% CSC staff and contractors trained.</li> </ul> | PIU, CSC<br>Gender/Social Specialist | Throughout project |

|                                                         |                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                               |                                                                                                                                         |                                                                                            |                        |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------|
|                                                         | <ul style="list-style-type: none"> <li>safeguards sessions to community</li> <li>Engage local women's organizations for community outreach.</li> <li>Provide gender-sensitivity, SEA/SH, and safeguards sessions to CSC and contractor staff</li> </ul>                                                                                          | <ul style="list-style-type: none"> <li>#of women-form groups and engaged in activities.</li> </ul>                                                                                                            |                                                                                                                                         |                                                                                            |                        |
| <b>Gender-Responsive Infrastructure and Services</b>    | <ul style="list-style-type: none"> <li>Integrate women-friendly design (Footbridges and/or passages in strategic locations of the irrigation system accessibility) in flood-resilient sub-project reconstruction.</li> <li>Prioritize pregnant/lactating women and women with disabilities during service reconstruction-restoration.</li> </ul> | <ul style="list-style-type: none"> <li># of facilities with gender-responsive design.</li> <li>% women beneficiaries.</li> </ul>                                                                              | <ul style="list-style-type: none"> <li>100% facilities compliant.</li> <li>50% women beneficiaries.</li> </ul>                          | CSC and Contractor Infrastructure Specialist                                               | Years 1–3              |
| <b>Disaster Risk Reduction &amp; Climate Resilience</b> | <ul style="list-style-type: none"> <li>Include women in early warning dissemination and community preparedness planning.</li> <li>Conduct disaster preparedness awareness sessions targeting women and girls.</li> <li>Promote women's engagement in climate-resilient water and land management.</li> </ul>                                     | <ul style="list-style-type: none"> <li>% women participating in DRR activities.</li> <li># women trained.</li> </ul>                                                                                          | <ul style="list-style-type: none"> <li>30% women participation.</li> <li>Annual awareness sessions conducted.</li> </ul>                | PIU, CSC Social and Gender team                                                            | Years 1–3              |
| <b>Safeguards &amp; GBV/SEA/SH Risk Prevention</b>      | <ul style="list-style-type: none"> <li>Establish GBV referral pathways and confidential reporting mechanisms.</li> <li>Conduct community-level awareness on GBV</li> <li>Enforce a Code of Conduct for all workers addressing GBV, SEA, and SH.</li> <li>Ensure labor influx and OHS plans integrate SEA/SH mitigation.</li> </ul>               | <ul style="list-style-type: none"> <li>GBV mechanism operational.</li> <li># awareness sessions conducted.</li> </ul>                                                                                         | <ul style="list-style-type: none"> <li>Functional system in all project areas.</li> </ul>                                               | PIU Safeguards Specialist; Contractors;                                                    | Throughout the project |
| <b>Gender responsive Grievance Redress Mechanism</b>    | <ul style="list-style-type: none"> <li>Establish women-friendly GRM access points, including female focal persons.</li> <li>Conduct GRM awareness sessions, including women-only sessions.</li> </ul>                                                                                                                                            | <ul style="list-style-type: none"> <li>% of project communities informed about the GRM, disaggregated by gender</li> <li>Number of GRM awareness sessions conducted, including women-only sessions</li> </ul> | <ul style="list-style-type: none"> <li>40% women participation.</li> <li>Monthly and Quarterly awareness sessions conducted.</li> </ul> | PIU, CSC Social and Gender team                                                            | Throughout project     |
| <b>Monitoring and Reporting</b>                         | <ul style="list-style-type: none"> <li>Monthly ESMP Monitoring Reports</li> <li>Quarterly Social Safeguards Reports</li> <li>GAP Progress Reports</li> <li>GRM records and community feedback</li> </ul>                                                                                                                                         | <ul style="list-style-type: none"> <li># of reports submitted; completeness source</li> </ul>                                                                                                                 | <ul style="list-style-type: none"> <li>Monitoring data will be sex-disaggregated and used to adapt implementation as needed.</li> </ul> | PIU Gender Specialist will oversee compliance, with third-party monitoring where required. | Throughout project     |

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|--|--|--|--|--|--|

## Annex: Gender Inclusion and Social Safeguards Field Monitoring and Screening Checklist

This checklist is to be used as part of ESMP implementation monitoring to assess gender inclusion, social safeguards, and GBV/SEA/SH risk management at the subproject level.

### 1. General Information

- 1 Subproject Name
- 2 Location
- 3 Date of Visit
- 4 Name of Enumerator
- 5 Team Composition (Male/Female)

### 2. Participation & Consultation

| No. | Indicator                                                   | Yes / No                                                 | Remarks |
|-----|-------------------------------------------------------------|----------------------------------------------------------|---------|
| 1   | Were women consulted separately (FGDs/meetings)?            | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 2   | Were female social mobilizers present?                      | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 3   | Was women's participation at least 30–40%?                  | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 4   | Were meeting timings suitable for women?                    | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 5   | Was the venue safe and culturally appropriate?              | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 6   | Were vulnerable women included (widows, elderly, disabled)? | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |

### 3. Access to Information

| No. | Indicator                                        | Yes / No                                                 | Remarks |
|-----|--------------------------------------------------|----------------------------------------------------------|---------|
| 1   | Are women aware of project activities?           | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 2   | Are IEC materials accessible and understandable? | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 3   | Are female mobilizers providing information?     | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 4   | Are women aware of GRM?                          | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 5   | Is GRM information displayed at site?            | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |

### 4. Livelihood & Economic Inclusion

|   | Indicator                                    | Yes / No                                                 | Remarks |
|---|----------------------------------------------|----------------------------------------------------------|---------|
| 1 | Are women involved in livelihood activities? | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |

|   |                                               |                                                          |  |
|---|-----------------------------------------------|----------------------------------------------------------|--|
| 2 | Are income generation opportunities provided? | <input type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 3 | Are women considered for project employment?  | <input type="checkbox"/> Yes <input type="checkbox"/> No |  |

#### 5. Safety & Mobility

| No. | Indicator                                      | Yes / No                                                 | Remarks |
|-----|------------------------------------------------|----------------------------------------------------------|---------|
| 1   | Are safe access routes available for women?    | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 2   | Is women's movement restricted due to project? | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 3   | Are separate and safe spaces available?        | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |

#### 6. GBV / SEA / SH Risk Management

| No. | Indicator                                        | Yes / No                                                 | Remarks |
|-----|--------------------------------------------------|----------------------------------------------------------|---------|
| 1   | Is Code of Conduct implemented at site?          | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 2   | Are workers trained on GBV/SEA/SH?               | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 3   | Are women aware of reporting mechanisms?         | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 4   | Are confidential reporting channels available?   | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 5   | Is there a female focal point for complaints?    | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 6   | Are service providers (health/legal) identified? | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 7   | Is worker–community interaction controlled?      | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |

#### 7. Health & Basic Services

| No. | Indicator                                                | Yes / No                                                 | Remarks |
|-----|----------------------------------------------------------|----------------------------------------------------------|---------|
| 1   | Do women have access to nearby health services?          | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 2   | Are women facing difficulty accessing health facilities? | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 3   | Are sanitation facilities available for women?           | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |

#### 8. Women Development Groups (WDGs)

| No. | Indicator                                    | Yes / No                                                 | Remarks |
|-----|----------------------------------------------|----------------------------------------------------------|---------|
| 1   | Are WDGs formed in the area?                 | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 2   | Are women actively participating?            | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 3   | Are WDG members involved in decision-making? | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 4   | Are meetings conducted regularly?            | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |

**9. Community Feedback & Needs**

| No. | Indicator                                    | Yes / No                                                 | Remarks |
|-----|----------------------------------------------|----------------------------------------------------------|---------|
| 1   | Do women demand electricity/solar solutions? | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 2   | Do women highlight need for schools?         | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |
| 3   | Do women report water/sanitation issues?     | <input type="checkbox"/> Yes <input type="checkbox"/> No |         |

**Key Issues Identified**


---

**Recommendations**


---

**Compliance Summary**

Overall Compliance Rating: ☐ Good ☐ Moderate ☐ Poor

**Verification**

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Organization: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**4. Stakeholder engagement and women's Consultation**

Separate consultations were conducted with women in project-affected villages, facilitated by female social mobilizers. These consultations informed project design and the GAP, highlighting priorities such as access to clean water, safe washing facilities, livelihood support, and energy access.

Women Development Groups (WDGs) have been established to support sustained participation and leadership of women during project implementation and GRM committees are identified at community level.

**5. Budget Allocation**

A minimum of 1% of the ESMPs of Component 1 budget will be allocated to Social, gender, and Environmental activities implementation, including training, community engagement, gender-responsive design features, and GBV prevention measures.

**6. Conclusion**

This Gender Action Plan provides a comprehensive, World Bank–compliant framework to ensure that Component 1 of IFRAP delivers equitable, inclusive, and safe outcomes for women and men. The GAP will be implemented as an integral part of the ESMP and updated as needed, based on monitoring results and World Bank guidance.

ANNEXURE: K

**ENVIRONMENTAL AND SOCIAL SCREENING CHECKLIST (B)**

**Component 1: Community Infrastructure Rehabilitation**

| <b>A</b> | <b>General Information</b>                          |                                                                        |
|----------|-----------------------------------------------------|------------------------------------------------------------------------|
| 1        | Subproject Location                                 | <b>District:</b> Sohbat Pur <b>Village:</b> Dur Abad and Goth Muhammad |
| 2        | Package                                             | Package -5                                                             |
| 3        | Subproject Activities                               | Rehabilitation of Zain ul Abdeen Flood Protection Bund                 |
| 4        | Proposed Date of Commencement of Work               |                                                                        |
| 5        | Important geographic / topographic feature (if any) | N/A                                                                    |
| 6        | Important biological feature (if any)               | Important biological feature observed.                                 |
| 7        | Sensitive Receptors within 200 m                    |                                                                        |

**B: Environmental Issues**

| <b>Sr. No</b> | <b>Issues</b>                                                                                     | <b>No/Yes</b> | <b>Risk Level</b> |                 |                    |             | <b>Remarks/Mitigation Measures</b>                                                                                         |
|---------------|---------------------------------------------------------------------------------------------------|---------------|-------------------|-----------------|--------------------|-------------|----------------------------------------------------------------------------------------------------------------------------|
|               |                                                                                                   |               | <b>Low</b>        | <b>Moderate</b> | <b>Substantial</b> | <b>High</b> |                                                                                                                            |
| 1             | Will the subproject involve significant land disturbance or site clearance?                       | No            |                   |                 |                    |             |                                                                                                                            |
| 2             | Will the subproject require the setting up of ancillary facilities?                               | Yes           |                   | ✓               |                    |             | Facilities (camps, storage) to be located away from sensitive receptors ensure sanitation, drainage, and waste management. |
| 3             | Will the subproject require a large amount of raw or construction materials, energy and/or water? | Yes           |                   | ✓               |                    |             | Mud / Stone                                                                                                                |
| 4             | Will the subproject generate large amounts of residual wastes, construction material waste?       | No            |                   |                 |                    |             | No residual waste, construction material waste is expected.                                                                |
| 5             | Is the sub-project expected to result in soil erosion?                                            | No            |                   |                 |                    |             | Soil erosion is not anticipated.                                                                                           |

|    |                                                                                                                                                                                                              |     |   |  |  |  |                                                                                                                                          |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|--|--|--|------------------------------------------------------------------------------------------------------------------------------------------|
| 6  | Is the sub project expected to create borrow pits for construction material?                                                                                                                                 | Yes |   |  |  |  | Material will be sourced from approved existing borrow areas as per Section 3.3.1.                                                       |
| 7  | Will the subproject result in potential soil or water contamination (e.g., from oil, grease and fuel from equipment yards)?                                                                                  | Yes | ✓ |  |  |  | Soil and water contamination expected during the construction phase. Strict plan or guidelines for the construction phase are suggested. |
| 8  | Will the subproject involve the storage, handling, or transport of hazardous substances?                                                                                                                     | No  |   |  |  |  | No, the subproject will not involve the storage, handling, or transport of hazardous substances.                                         |
| 9  | Will the sub project disturb the ambient air quality and/or increase the level of harmful air emissions (due to generation of dust from construction activity, vehicular/ Machinery exhaust emissions, etc.) | Yes | ✓ |  |  |  | Dust may be generated due to vehicle movement and construction activities.                                                               |
| 10 | Will the subproject increase ambient noise levels?                                                                                                                                                           | No  |   |  |  |  | No any Noise pollution occur.                                                                                                            |
| 11 | Are there any protected areas on or around the locations which could be affected by the subproject?                                                                                                          | No  |   |  |  |  | No protected areas nearby.                                                                                                               |
| 12 | Will there be any adverse impact on the flora due to subproject activities?                                                                                                                                  | Yes | ✓ |  |  |  | Only scattered grosses, shrubs etc removing is anticipated near the project area.                                                        |
| 13 | Will there be any adverse impact on the fauna due to subproject activities?                                                                                                                                  | No  |   |  |  |  | Fauna will not expect to effect by subproject.                                                                                           |

#### C: Social Issues

| Sr. No | Issues                                                                | No/Yes | Risk Level |          |             |      | Remarks/Mitigation Measures                                 |
|--------|-----------------------------------------------------------------------|--------|------------|----------|-------------|------|-------------------------------------------------------------|
|        |                                                                       |        | Low        | Moderate | Substantial | High |                                                             |
| 1      | Will the subproject activities involve a significant inflow of labor? | Yes    | ✓          |          |             |      | Local labor will be engaged minimal risk of outside influx. |

|    |                                                                                                                                                                                           |    |  |  |  |  |                                                                                                  |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--|--|--|--|--------------------------------------------------------------------------------------------------|
| 2  | Will there be any social conflicts arising from the interaction of laborers with locals, particularly by the induction of outside labor and establishment of construction camps (if any)? | No |  |  |  |  | No social conflicts are expected as no outside labor or camps will be required.                  |
| 3  | Will the activities supported by the project anticipate the occurrence of child labor, forced labor, or bonded labor?                                                                     | No |  |  |  |  | Project activities will not involve child, forced, or bonded labor                               |
| 4  | Will the subproject activities pose risks to nearby sensitive receptors (mosque, temple, church, graveyard, hospital, school/college/university), if any?                                 | No |  |  |  |  | No sensitive receptors in the immediate vicinity                                                 |
| 5  | Will the sub project pose occupational health and safety risks?                                                                                                                           | No |  |  |  |  | No Any Occupational health risk.                                                                 |
| 6  | Will the sub project pose community health and safety risks?                                                                                                                              | No |  |  |  |  | The subproject will not pose any community health and safety risks.                              |
| 7  | Risk of increase in traffic and pedestrian safety due to the construction vehicle movement, particularly near sensitive receptors.                                                        | No |  |  |  |  | No risk to traffic or pedestrian safety from construction vehicles near sensitive areas.         |
| 8  | Will there be land acquisition? If yes, is the site for land acquisition and ownership status and current usage of land to be acquired known?                                             | No |  |  |  |  | Land acquisition process to follow legal procedures documentation and fair compensation required |
| 9  | Will there be a loss of shelter and residential land due to the land acquisition or clearance of the existing site?                                                                       | No |  |  |  |  | No residential land or shelter will be affected                                                  |
| 10 | Are any informal settlers or flood-affected persons present on the subproject site where construction and rehabilitation activities will be carried out?                                  | No |  |  |  |  | No informal settlers or flood-affected persons present at the site                               |
| 11 | Has there been any Anti-Encroachment Drive to forcefully evict/move people at the site where the works are planned to be carried out?                                                     | No |  |  |  |  |                                                                                                  |
| 12 | Will there be a loss of agricultural land, crops, trees, and fixed assets due to land acquisition?                                                                                        | No |  |  |  |  | Only shrubs and bushes may be cleared.                                                           |

|    |                                                                                                                                                                                                                                                                                                                                                                                                          |     |   |  |  |  |                                                                                                                                                                                               |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|--|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13 | Will people lose access to natural resources, communal facilities and services due to involuntary land use restrictions or access to legally designate parks/protected areas?                                                                                                                                                                                                                            | No  |   |  |  |  | No loss of access to natural resources                                                                                                                                                        |
| 14 | Any estimate of the likely number of persons affected by the subproject? If yes, approximately how many? Are any of them falling into disadvantaged/vulnerable groups such as Female/child headed households, Internally Displaced Persons (IDPs), Refugees, Ethnic and religious minorities, Persons with disabilities, Transgender communities, Senior citizens, or economically marginalized groups)? | No  |   |  |  |  | No persons will be affected                                                                                                                                                                   |
| 15 | Have there been any past security-related issues at the subproject site?                                                                                                                                                                                                                                                                                                                                 | No  |   |  |  |  | No security related issues.                                                                                                                                                                   |
| 16 | Has stakeholder engagement taken place with relevant stakeholders (Provincial/District level Government Departments/Communities/NGOs/CSOs) for the subproject?                                                                                                                                                                                                                                           | Yes | ✓ |  |  |  | Initial consultations carried out further engagement will continue during implementation                                                                                                      |
| 17 | Is the subproject being implemented in an area With natural hazard risk? (e.g., floods, earthquakes, cyclones etc.).                                                                                                                                                                                                                                                                                     | Yes |   |  |  |  | Yes, the project area is in a flood-prone zone (Kachhi Plain). The ESMP includes specific mitigation for flood risk (see Sections 6.5.1.9, 6.5.2.6.8, and Annexure-R.                         |
| 18 | Will there be any impact on women that may hinder their mobility during reconstruction and rehabilitation activities?                                                                                                                                                                                                                                                                                    | No  |   |  |  |  | Women's mobility will not be hindered during activities                                                                                                                                       |
| 19 | Will the proposed subproject potentially involve shifting of public utilities?                                                                                                                                                                                                                                                                                                                           | No  |   |  |  |  | No required                                                                                                                                                                                   |
| 20 | Are any indigenous peoples (as per World Bank ESS7) present in the subproject area?                                                                                                                                                                                                                                                                                                                      | No  |   |  |  |  | As per World Bank ESS7, no Indigenous Peoples (as defined by the policy) are present in the project area. All communities are considered part of the mainstream population under national law |

|    |                                                                                                                        |    |  |  |  |  |                                   |
|----|------------------------------------------------------------------------------------------------------------------------|----|--|--|--|--|-----------------------------------|
| 21 | Will the construction and rehabilitation activities cause socio-cultural issues and damage any cultural heritage site? | No |  |  |  |  | No cultural heritage site present |
|----|------------------------------------------------------------------------------------------------------------------------|----|--|--|--|--|-----------------------------------|

**No Objection Certificate (NOC)**

|                                                                                           |                                                          |
|-------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Balochistan Environmental Protection Agency (BEPA) NOC / Environmental Approval Required  | Yes [ ] No, if Yes, select the required study from below |
| Type of Environmental and Social Study                                                    | EIA [ ], IEE [ ], Environmental Checklist [ ]            |
| Any other NOC from Government of Balochistan (Gob)/ Government of Pakistan (Gop) Required | [ ] Yes, [ ] No, if Yes, please specify                  |

**For World Bank Approval**

|                                             |                                                                                                                                                |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Further assessment required                 | [ ] Yes [ ] No, if Yes, select the required study from below                                                                                   |
| Type of Environmental and Social Assessment | ESIA [ ], ESMP s [ ], E&S Checklist shall suffice [ ], RAP [ ], PCRMP [ ], Water Balance Study [ ], GHG Estimation [ ], BAP [ ], E&S Audit [ ] |

**Conducted by:**Name Shakoor kakar Designation Social Organizer

Signature \_\_\_\_\_ Date \_\_\_\_\_

**Reviewed and approved by:**

Name \_\_\_\_\_ Designation \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

ANNEXURE: L

COMMUNITIES CONSULTATIONS AT SITE OF ZAIN UL ABIDEEN FPB

مشاورتی اجلاس

تاریخ: کلہو مہیچا - 03 مقام: صحبت پور Solatpur وقت: از 1:00 تا 3:00

آیڈا:-

- 1: ضلع صحبت پور میں زمین العابدین ڈرین کے حوالے سے پریفنگ
- 2: موجودہ بحالی (Rehabilitation) کے کام کی تفصیل پیش کرنا۔
- 3: صورحوالیاتی و سماجی اشارات (Es) اور حفاظتی اقدامات کی وضاحت۔
- 4: کمیونٹی کے مسائل خدشات اور تجاویز سنا + یقین دہانی۔
- 5:

تفصیل:

اجلاس میں ہوا آغاز تلاوت کراپاں سے ہوا۔ اس کے بعد IFRA Project شروع ہوا۔ شرما کو خوش آمدید کہا گیا۔ اور IFRA پروجیکٹ کے تحت اجلاس کا مقصد بیان کیے۔ شرما کو بتایا گیا کہ پروجیکٹ کا مقصد Zain-ul-Abdeen Drain ڈسٹرکٹ صحبت پور (Solatpur) ڈرین کی بحالی صفوطی پانی کی بیاؤں میں بہتری کمیونٹی کے خدشات کا حل اور دیگر ڈرین فائدہ کرنا ہے۔ ڈرین کے متعدد مقامات پر سلٹ جمع ہو چکی ہے۔ کناروں کی کٹائی (Erosion) کچھ حصوں میں گرائنگ، بکچ اور ڈریجنگ پانی کے بیاؤں میں غیر ضروری رکاوٹیں، مضافاتی و بحالی کی عدم دستیابی کی وجہ سے ذراعت متاثر ہو رہی ہے۔ پانی کی سیلابی مکمل بند نہیں کی جائے گی۔ رکاوٹ کم سے کم رکھی جائے گی۔ کام مرحلوں اور ہنگاموں

فوری بخش دستخط: فوری بخش

نام: یامر حسین دستخط: یامر حسین

۴: نام: عبدالقادر دستخط: عبدالقادر

۵: نام: شاہ رخ بیٹوی دستخط: شاہ رخ بیٹوی

۶: نام: Adil Ahmed دستخط: Adil Ahmed

۷: نام: سراج ستغلی دستخط: سراج ستغلی

۸: پروجیکٹ سٹاف:

۹: نام: محمد شعیب سلمان سول انجینئر دستخط: محمد شعیب سلمان

۱۰: نام: صبر زریں رودینی (Social) دستخط: صبر زریں

۱۱: نام: احسان اللہ اللہ زویہ امجدی دستخط: احسان اللہ

۱۲: نام: دستخط:

۱۳: نام: دستخط:

۱۴: نام: دستخط:

۱۵: نام: دستخط:

۱۶: نام: دستخط:

|      |                                  |        |                             |
|------|----------------------------------|--------|-----------------------------|
| نام: | فور بخش                          | دستخط: | فوری بخش                    |
| نام: | یاسر حسین                        | دستخط: | یاسر حسین                   |
| نام: | عبدالقادر                        | دستخط: | عبدالقادر                   |
| نام: | شاہ رخ بیٹوی                     | دستخط: | شاہ رخ بیٹوی                |
| نام: | Adil Ahmed                       | دستخط: | Adil Ahmed                  |
| نام: | سراج سنگھ                        | دستخط: | سراج سنگھ                   |
| نام: | پروجیکٹ سٹاف:                    |        |                             |
| نام: | محمد شعیب سلمان سول انجینئر      | دستخط: | محمد شعیب سلمان سول انجینئر |
| نام: | صہر زری (Social Organisation)    | دستخط: | صہر زری                     |
| نام: | احسان اللہ (Social Organisation) | دستخط: | احسان اللہ                  |
| نام: |                                  | دستخط: |                             |
| نام: |                                  | دستخط: |                             |
| نام: |                                  | دستخط: |                             |
| نام: |                                  | دستخط: |                             |
| نام: |                                  | دستخط: |                             |

## ANNEXURE: M

### LIST OF PARTICIPANTS IN CONSULTATIVE MEETING WITH DISTRICT ADMINISTRATION

| S. No | Name                    | Department                         | Designation                            |
|-------|-------------------------|------------------------------------|----------------------------------------|
| 1     | Ms. Fareeda Tareen      | Administrative /Revenue Department | Deputy Commissioner Sohbatpur          |
| 2     | Mr. Saif Ul din Khoso   | Administrative /Revenue Department | Deputy Commissioner Sohbatpur          |
| 3     | Mr. Khurshid Alam       | Irrigation Department              | XEN Irrigation, Sohbatpur Division     |
| 4     | Mr. Tariq Hanees        | Agriculture Department             | District Agriculture Officer Sohbatpur |
| 5     | Mr. Bandar Nazeer Ahmad | Irrigation Department              | SDO Irrigation, Sohbatpur Sub-Division |
| 6     | Shakoor Kakar           | CAMEOS Consultant                  | Social Safeguard Specialist            |
| 7     | Naqeeb Ullah Kakar      | CAMEOS Consultant                  | Social Safeguard Specialist            |
| 8     | Sidra                   | CAMEOS Consultant                  | Gender Specialist                      |
| 9     | Mir Zarak               | CAMEOS Consultant                  | Social organizer                       |
| 10    | Mili khan               | CAMEOS Consultant                  | Junior Environment Specialists         |

## ANNEXURE: N

### LABOUR INFLUX PLAN

This plan identifies labour requirements and sets out the procedures for addressing labour conditions and risks associated with the proposed project, which is aimed at helping PIU to determine the resources necessary to address project labor issues.

| SUB-CATEGORY         | WORKER IMPACTS/RISKS                                                                                                                                                                      | PROJECT IMPACTS/RISKS                                                                                                                                                                                                       | MITIGATION MEASURES                                                                                                                                                                                                                                                                                          |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Employment           | Influx of many foreigners into project community                                                                                                                                          | Competition on livelihood and job opportunity with locals                                                                                                                                                                   | No of unskilled labour shall be from the project community. Where possible qualified skilled workers on contract shall also be sourced within the community                                                                                                                                                  |
| Housekeeping.        | The general appearance of the camp deteriorates making camp life unpleasant.                                                                                                              | The overall camp experience is compromised which in turn leaves workers demoralized and unproductive.                                                                                                                       | Ensure that camp grounds and common areas are routinely cleaned and organized with appropriate signage in place, and that grounds are maintained (e.g., grassed areas are regularly mown).<br><br>Establish easily accessible, designated smoking areas which are clearly highlighted and regularly cleaned. |
| Recreation.          | Workers spend most of their time in the camps and could become disenchanted and bored. They may want to leave the camps and go into the local towns and villages in search of recreation. | Tensions arise from the local communities as workers impact their activities in search of recreation. An increase in alcohol consumption and prostitution could result due to the influx of workers into local communities. | Provide appropriate recreational facilities and activities. These should be discussed with the camp residents committee.                                                                                                                                                                                     |
| Spiritual /Religion. | Workers will want access to places of worship for their chosen religion. They may leave the camps and go into the local towns and villages in search of an appropriate place of worship.  | Tensions arise from the local communities as workers impact their activities.                                                                                                                                               | Provide appropriate places of worship where residents express a need for this in accordance with cultural sensitivities, and assess transport arrangements on a case-by-case basis.<br><br>Ensure that equipment and facilities are kept clean and well maintained.                                          |

| SUB-CATEGORY         | WORKER IMPACTS/RISKS                                                                                                                                                                                                                                           | PROJECT IMPACTS/RISKS                                                                                                                                                                                                                    | MITIGATION MEASURES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Security.            | Inconsistent and aggressive behaviour of security personnel towards workers can result in tensions and conflict in the workplace and a perception of human rights abuses.                                                                                      | Insufficient training and control of security personnel can lead to the inappropriate use of force, while protecting Project workers and assets, or inappropriate behaviour towards local populations, resulting in human rights claims. | <p>Ensure that camp security personnel meet at least the following requirements:</p> <ul style="list-style-type: none"> <li>• Have not been implicated in past abuses</li> <li>• Are trained in appropriate conduct towards workers and community members including: <ul style="list-style-type: none"> <li>o Exercising constraint and caution and understand how force may be used</li> <li>o Respecting human rights</li> <li>o Behaving consistently</li> <li>o Knowing and abiding by applicable laws</li> <li>o Fostering good community relations through their interaction and behaviour towards the workforce and communities</li> </ul> </li> </ul> |
| Community relations. | Communities are negatively impacted by camp activities: noise, waste, traffic, lighting and so forth. This may result in negative actions towards camp operations such as road closures and the prevention of workers or suppliers from entering the worksite. | Workers are stopped from going to work, which affects productivity.                                                                                                                                                                      | <p>Implement control measures to avoid and minimise the impacts of camp and living conditions on communities.</p> <p>Limit foreign worker interaction with communities and provide cultural sensitivity awareness training to facilitate appropriate interaction with communities.</p>                                                                                                                                                                                                                                                                                                                                                                        |

## ANNEXURE: O

### CAMP MANAGEMENT PLAN

Company X (the Company) has developed this Camp Management Plan as part of its Environmental and Social Management Plan (ESMP) outlining a range of mitigation measures designed to avoid or reduce undesired camp management impacts during construction. This document establishes a basis and template for use by the Contractor(s) to develop their own plans outlining not only mitigation measures but to also incorporate the roles and responsibilities described in the ESMP.

**The objectives of the Camp Management Plan are:**

Avoid or reduce negative impacts on the community and maintain constructive relationships between local communities and workers' camps; and

Establish standards on worker welfare and living conditions at the camps that provide a healthy, safe and comfortable environment.

This Plan should be read in conjunction with other environmental and social management plans (ESMPs), if available including:

- Traffic Management Plan
- Security Plan
- Stakeholder Engagement Plan

### Legal Requirements and Grievances

The Contractor is required to operate within the parameters of the Pakistan's Standard Labor Laws & Policy and the International Labour Organization guidelines. The World Bank Performance Standards are applicable to IFRAP and its subprojects. Furthermore, the Grievance Redress Mechanism contained in this ESMF is required to be adhered to by the Contractor.

Contractor personnel shall conduct regular safety walks and an HSE committee will track performance against requirements stipulated in this plan. The Contractor will also have its grievance mechanism developed for the project.

Additionally, Contractor would be required to sign and acknowledge the Code of Conduct and agree to abide by its provisions.

## ANNEXURE: P

### PROJECT TRAFFIC MANAGEMENT PLAN (SAMPLE)

#### 1. Introduction

This Traffic Management Plan describes procedures and protocols for site access, traffic routing and management, and contractor company guidelines with respect to vehicle and employee transportation in delivering their obligations on this intervention project. Public, employee and contractor safety is the primary goal of this plan. It is vital that the Contractor recognizes that the traffic within the project area will be dynamic throughout the course of execution of this works and the safety of other road users is absolutely essential during this time.

#### 2. General Site Access

In the interest of site security and public safety, access to operational areas or locations where heavy-duty machinery would be operated in related to the execution of this contract will be restricted to authorized site personnel through the usage of signs and gates where appropriate. Facilities that potentially present danger to persons or wildlife such as the electrical substation, equipment staging area and workers camp will be fenced or barricaded as appropriate to prevent general access.

#### 3. Traffic Management

- All traffic on routes to and from the site will be radio controlled. Where this is not possible, signage will be installed at appropriate locations in order to warn the public along these routes.
- In the event that temporary closure occurs, access to the sites will be further restricted through the use of fences and gates as appropriate. Access to work areas such as temporary excavated places, or confined spaces where work is ongoing will be securely blocked by means of a temporary but robust barrier or barricade. Buildings and ancillary facilities will be locked and secured. A number of additional general measures related to site access, road management and public safety and construction events notification are presented here:
- Private employee off-road vehicles or private transport buses will be prohibited from entry into the site.
- Signage will be posted near all construction sites.
- Notifications will be provided for activities that would be carried out over the weekend or public holiday periods. These would be disseminated through existing social institutions such as the village or district heads of communities, Local Government Councillors and NGO's or CBO's
- Speed limit maintained at 10 km/hr speed limit within or near the communities;
- Install reverse alarm fitted on all trucks, heavy duty equipment and off-road vehicles
- Employ or engage the use of a minimum of two flagmen around excavated areas, one for traffic approach and one to direct traffic away from the sites

In accordance with the Occupational Health and Safety Regulations for public roads, use of flashing devices/trifactor on all vehicles/machinery and equipment that will cross, travel on or may otherwise pose a risk to users of public roads.

#### **4. Employee Transportation**

To the extent possible employees will use buses provided by the contractor as transportation to and from the site, thereby reducing overall vehicle traffic. Project vehicles or will be utilized by staff, only when necessary.

#### **5. Speed Limits**

Speed limits will be enforced to and from the site and signage(s) shall be posted along the access and site roads (maximum 40 km/hr, reduced to 20 km/hr at blind corners and bridge crossings. Traffic along other access roads will be radio controlled for safety and speed control. Furthermore, employees and contractors will be educated on safety including traffic protocols and speed limits during mandatory orientation. Routine traffic inspections and/or speed indicator signs will be used to encourage safe and responsible driving.

#### **6. Communications And Notification Protocols**

It is anticipated that the intervention project will require only single-lane temporary closures. Signage warnings of construction activities on the roads will be placed at appropriate distances from the construction site, in consultation with C&W Department, GoB. For significant work activity (those requiring more than one day to complete), written notification will be distributed to residents and other line departments. A public notice would be posted at multiple locations in the metropolis to communicate to residents any new activities that may be occurring or scheduled. Contact information for the Contractors senior management will be included in this notice and any concerns regarding the intervention work/project or traffic management can be forwarded through this notification system.

#### **7. Traffic Routing and Volumes**

Alternative traffic routing shall be mapped out and provided in the event that there will be complete closure of the road due to this intervention work activity. Traffic officers and appropriate road diversion signage(s) shall be deployed to ensure diversions routes are properly identified and traffic is directed along the mapped route. The flagmen shall be properly kitted in their Personal Protective Equipment (PPE), such as reflector vests and safety boots, to ensure that safety on the job is given due priority.

#### **8. Reporting**

Records on traffic management and implementation of this plan should be kept and updated by the contractor as evidence of ongoing mitigation compliance, which will be submitted to PIU as part of routine reports on progress of work.

ANNEXURE: Q

OCCUPATIONAL HEALTH & SAFETY (OHS) PLAN (SAMPLE)

| Project Activity                                                                                                               | Potential Impact                                                                       | Proposed Measures/ Actions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Mitigation | Responsibility for mitigation |
|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------|
| <b>I. Pre-Construction Phase</b>                                                                                               |                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                               |
| Site clearing for staging area<br>Mobilization of<br>Excavation, dredging or grading, compaction, filling<br>Plant & Equipment | Occupational accidents and injuries to workers and risk to community health and safety | Develop and implement a project specific Occupational Health and Safety Plan (OHSP). OHSP to include but not limited to:<br><br>-Prohibition of drug and alcohol use by workers while on the job.<br>- Provision of adequate first aid, first aiders, PPE, signage (English, Urdu, Balochi and Sindhi languages).<br>- Restriction of unauthorized access to all areas of high-risk activities<br>- Provision of specific personnel training on worksite OHS management<br>- Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers<br>- Any uncovered work pits should have appropriate signage and protection around them<br>- Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before<br>- Adequate safety signage on construction sites should be installed to alert community/drivers/pedestrians<br>- lighting and/or reflective tapes and signage integrated in all worksites for safety at night<br>- appropriate security measures in place to prevent harassment or kidnapping of workers<br>- Ensure contractors employees are aware of security threats in work location by having in place a Security Management Plan and should refer to it at all times |            | <b>Contractor</b>             |
| Mobilization of personnel, equipment, machinery, heavy duty vehicles for                                                       | Exposure to and transmission of COVID-19                                               | *Ensure implementation of the government established and PIU preparedness & Response protocols on COVID-19 by:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                               |

| Project Activity                   | Potential Impact                                                 | Proposed Measures/<br>Mitigation<br>Actions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Responsibility for mitigation                |
|------------------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| preparation of workers' camp       |                                                                  | <ul style="list-style-type: none"> <li>*Preventing overcrowding on site by following govt. established regulations on social distancing</li> <li>*Provide wash hand basins for proper and thorough and washing to enter and leave sites</li> <li>*carry out regular temperature checks at the beginning and end of each working day</li> <li>*use of minimum required PPE (face masks, gloves and face shields etc.)</li> <li>*Ensure disinfecting of tools with strong disinfectant (bleach etc.) after work</li> <li>*Provision of an isolation center or room on site</li> </ul> |                                              |
| Use of Workers Camp                | Generation of sanitary waste from worker's camp                  | <ul style="list-style-type: none"> <li>Ensure provision of sanitary facilities on site for workers and enforce usage.</li> <li>Ensure usage of approved waste vendor for waste evacuation &amp; disposal.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                | Contractor                                   |
| trucks for sand & materials supply | Public safety, road accidents leading to injuries and fatalities | <ul style="list-style-type: none"> <li>Train drivers on defensive driving</li> <li>Conveyance of materials to site shall be by appropriate means of transportation to prevent damage or accidents</li> <li>Provide road signs and flag persons to warn of dangerous conditions of conveying materials such as the water trucks</li> </ul>                                                                                                                                                                                                                                           | <p>Contractor</p> <p>PIU Safeguards Team</p> |

| Project Activity                                                                                                                                                                                                                                               | Potential Impact                                                                                                                                                      | Proposed Measures/<br>Actions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Mitigation | Responsibility for mitigation                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Excavation, grading, compaction, filling and other civil works for channelization<br>Excavation and compaction activities through construction works will alter the soil properties including loss of valuable topsoil's<br>Use of generators for power supply | Public safety, road accidents leading to injuries and fatalities affecting host community population, which could lead to conflict/unrest and stoppage of activities. | Develop and implement a project specific Occupational Health and Safety Plan (OHSP).<br>OHSP<br>Ensure QA/QC control is established on inspection of materials, which are to be of best quality to<br><ul style="list-style-type: none"><li>• prevent defective outcomes on construction sites</li><li>• Ensure workers are aware of inherent risks in use of pavement materials such as bitumen</li><li>• Use of appropriate PPE to ensure risks to accidents &amp; incidents are minimized or eliminated</li><li>• Use tarpaulins to cover sand and other loose material when transported by trucks</li><li>• Ensure excavation pits are used for extraction of material only for project purposes and not commercial</li><li>• Ensure generators are operated by dedicated trained personnel</li><li>• Carry out regular servicing of generator to reduce release of harmful emissions</li></ul> |            | Engineering Consultant/Ministry of Works & Transport<br><br>Environmental Safeguards Specialist<br>Excavation and compaction activities through construction works will alter the soil properties including loss of valuable topsoil's<br>Use of generators for power supply |
| Use of workers camp                                                                                                                                                                                                                                            | Sanitation issues and public health impacts                                                                                                                           | <ul style="list-style-type: none"><li>• Provide bins on site for temporary storage of domestic waste such as lubricant containers, drinking water sachets and carrier bags/packaging materials.</li><li>• Dispose all construction and domestic waste at the approved dumpsites and in the approved manner.</li><li>• Ensure all trenches or excavations made during the construction works do not collect stagnant water, which could breed mosquitoes.</li><li>• Ensure access to toilets for construction crew or provide temporary toilets (mobile toilets) for use where there are no existing ones.</li><li>• Ensure mobile toilets/sanitary provisions are</li></ul>                                                                                                                                                                                                                         |            | Contractor/<br>Engineering Consultant<br><br>Environmental Safeguards Specialist                                                                                                                                                                                             |

| Project Activity                                                                                                                        | Potential Impact                                                                       | Proposed Measures/<br>Mitigation<br>Actions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Responsibility for mitigation |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
|                                                                                                                                         |                                                                                        | <p>provided to reflect gender types.</p> <ul style="list-style-type: none"> <li>Ensure regular toolbox meetings are held among contractor workers to offer awareness on transmission of contagious or communicable diseases.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                               |
| <p>Construction Machinery &amp; Equipment</p> <p>Movement of materials</p> <p>Use of Compaction, filling &amp; excavation equipment</p> | Occupational accidents and injuries to workers and risk to community health and safety | <p>Develop and implement a project specific Occupational Health and Safety Plan (OHSP). OHSP to include but not limited to:</p> <ul style="list-style-type: none"> <li>- Prohibition of drug and alcohol use by workers while on the job.</li> <li>- Provision of adequate first aid, first aiders, PPE, signage (English, Urdu, Balochi and Sindhi languages).</li> <li>- Use only trained personnel for welding activities</li> <li>- Restriction of unauthorized access to all areas of high-risk activities</li> <li>- Provision of specific personnel training on worksite OHS management</li> <li>- Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers</li> <li>- Any uncovered work pits should have appropriate signage and protection around them</li> <li>- Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before</li> <li>- Adequate safety signage on construction sites should be installed to alert community/drivers/pedestrians</li> <li>- lighting and/or reflective tapes and signage integrated in all worksites for safety at night</li> <li>- appropriate security measures in place to prevent harassment or kidnapping of workers</li> </ul> | Contractor                    |
| culverts, drainage basins Construction                                                                                                  | Occupational accidents and injuries to workers and risk to                             | <ul style="list-style-type: none"> <li>Ensure location is properly cordoned off before construction activities are carried out</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Contractor                    |

| Project Activity                                                                         | Potential Impact                                                                  | Proposed Measures/ Actions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Mitigation | Responsibility for mitigation          |
|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------------------|
|                                                                                          | community health and safety<br>Erosion<br>Risk of erosion and flood               | <ul style="list-style-type: none"> <li>• Carry out proper levelling and setting out to ensure appropriate road gradient is achieved to prevent ponding/flooding issues</li> <li>• Create awareness in neighbouring communities to ensure road users are aware of road intervention work</li> <li>• Use of biological control measures (tree planting) with tree roots that will bind soil and reduce erosion</li> <li>• As much as possible, ensure community minimizes movement around the site and should be informed before this type of work is carried out</li> <li>• Use appropriate signage along road to show work in progress</li> <li>• Use of flagmen to divert traffic where required</li> <li>• Provide side-drains to promote effective run off channelization</li> <li>• Crosscheck design to ensure road gradient is adequate enough to avoid backflow runoff into residences</li> </ul> |            |                                        |
| Channelization & construction activities                                                 | Increase in spread of Communicable diseases, STDs such as HIV/AIDS and other STIs | <ul style="list-style-type: none"> <li>• Ensure access into construction site is restricted</li> <li>• Vaccinating workers against common and locally prevalent diseases;</li> <li>• Monitoring of local population health data, in particular for transmissible diseases.</li> <li>• Implementation of HIV/AIDS education program;</li> <li>• Information campaigns on STDs among the workers and local community in collaboration WITH relevant HIV/AIDS management organizations</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                           |            | Contractor/<br>Engineering Consultant; |
| Demobilisation of facilities, excavation, grading, compaction, filling plant & equipment | Risks of occupational accidents and injuries to workers.                          | Develop & implement a project specific Occupational Health and Safety Plan (OHSP) to include but not limited to: <ul style="list-style-type: none"> <li>- Prohibition of drug and alcohol use by workers while on the job.</li> <li>- Provision of adequate first aid, first aiders, PPE, signage</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            | Contractor                             |

| Project Activity                     | Potential Impact | Proposed Measures/<br>Actions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Mitigation | Responsibility for mitigation |
|--------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------|
|                                      |                  | <p>(English, Urdu, Balochi and Sindhi languages).</p> <ul style="list-style-type: none"> <li>- Restriction of unauthorized access to all areas of high-risk activities.</li> <li>- Provision of specific personnel training on worksite OHS management</li> <li>- Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers</li> <li>- Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before</li> <li>- Adequate safety signage on construction sites should be installed to alert community/drivers/pedestrians</li> <li>- lighting and/or reflective tapes and signage integrated in all worksites for safety at night</li> <li>appropriate security measures in place to prevent harassment</li> </ul> |            |                               |
| Excavation<br>decommissioning<br>pit | Public health    | <ul style="list-style-type: none"> <li>*Level out hollow area of pits to reduce ponding of water &amp; stagnation</li> <li>*Revegetate area around the pit to re-introduce natural habitat formation</li> <li>*Planting of trees to replace felled vegetation</li> <li>Maintain drainage channels to reduce water collection in hollow</li> <li>*Use of brackets in stagnant pond formation areas to eliminate insect breeding</li> <li>*Carry out burrow pit reclamation according to remediation plan</li> </ul>                                                                                                                                                                                                                                                                                                                                     |            | Contractor                    |

## ANNEXURE: R

### CONTINGENCY AND EMERGENCY RESPONSE PLAN (SAMPLE)

#### Introduction

An emergency is best described as a serious situation or unforeseen crisis that happens unexpectedly and requires or demands immediate/necessary action. This is often associated with danger. Therefore, this plan has been prepared to establish a process that has been adopted by our organization to respond to any emergency situation. This plan has the following fundamental objectives are:

To ensure that we can identify how to prepare for an emergency provide a checklist of actions that would enable our team prepare to handle such emergencies

#### The objective

The aim of this plan is therefore to examine a series of steps in the process, which is designed to ensure that any situation that necessitated that the status of emergency be apportioned, be managed in a manner that would ameliorate this condition.

Thus, this plan provides guidelines on the best approach that would be engaged by employees of the Contractor company in emergency situations, which may be as a consequence of the following:

- Medical (health)
- Safety
- Environmental
- Security
- Any other types of emergencies
- Emergency Response Team (ERT)

An emergency response team will be constituted for the project. These will be the group of persons that would have the responsibility of managing this emergency plan in a manner that would ensure the goals of this plan are achieved. For this reason, the members of the ERT are:

- Managing Director (or representative)
- HSEQ Officer
- Project Engineer
- Supervisor

- Support members (headmen from units – civil, mechanical, electrical etc.)
- Supervising Consultant representative
- PIU representative

### Emergency Response Centre (ERC)

Due to the temporary nature of the facilities that would be utilized as workers camp & site office, for intervention projects, the site office will also be converted into the Emergency Response Centre (ERC), in cases of emergency. Therefore, appropriate communication equipment shall be available in the office, to ensure that the channels of contact are available, at all times.

In the minimum our ERC will have:

- A computer system with internet facilities available
- A telephone
- A public address system
- Activation of this Emergency Response Centre

The individual that receives the information that could potentially necessitate an emergency response should immediately convey the information to the Project Engineer.

Jointly, the project engineer and the Safety officer will review the situation/information, following which the managing director will be contacted (if not on site).

The managing director will hereafter take the decision of the gravity of the situation, following which it may be necessary to constitute an ERT and convert the site office into the ERC.

Core ERT and support members will be represented once the ERC is activated.

### Checklist of Emergency Response Actions

These actions shall be implemented immediately the ERC is activated:

| S. Nr | Actions                                                                                                                                                                                                                                                                                                  |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | Verify status of emergency and likely exposure of other personnel to risk, ensure ERT members are fully equipped in emergency response equipment                                                                                                                                                         |
| 2     | Locate and account for all personnel on site (muster point) and if appropriate, implement the evacuation procedure, if necessary. Review                                                                                                                                                                 |
| 3     | Establish and maintain close contact with relevant authorities related or connected to the resolving of this emergency. e.g. in case of medical emergency, a hospital, security emergencies will require a contact with government law enforcement agencies – police etc.                                |
| 4     | Inform supervising consultant & PIU representative as promptly as possible in order to establish interface link with Client                                                                                                                                                                              |
| 5     | Transmit any information update or changes in situation status to emergency focal group; the managing director and members of the ERT and determine if there is a need to shut down critical on going operational activities                                                                             |
| 6     | Depending on the type of emergency, any necessary follow up action should be determined and promptly acted upon, as may be required e.g. medical emergencies may require evacuation, environmental emergencies may require containment, safety emergencies may require prompt cordoning off of area etc. |

| S. Nr | Actions                                                                                                                                                                                                                      |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7     | Internal Communication channel with other personnel should be kept open, by means of public address system or telecommunication (walkie talkies) and updates provided to forestall any likely re-occurrences, where possible |
| 8     | Examine cross-cutting impact of emergency on liability issues and operational continuity. e.g. media involvement in security emergencies                                                                                     |
| 9     | Undertake an assessment of risk to review other potential liabilities and deploy mitigation measures, where necessary. e.g. workmen compensation insurances in case of accident emergencies                                  |
| 10    | Review all cost implications of emergency response actions and make necessary budgetary provisions                                                                                                                           |
| 11    | Provide the PIU with updates immediately additional information is received.                                                                                                                                                 |

### Accident reporting

This accident report would be factual, free from hearsay, assumptions, gossips and / or preliminary conclusions. The report shall be duly signed by the Project engineer. The PIU shall be briefed about the accident in writing within 24 Hours.

### Timing of investigation

The investigation should be carried out as soon as possible after the accident. The quality of evidence can deteriorate rapidly with time and delayed investigation are usually not as conclusive as those performed with dispatch. A prompt investigation is a good demonstration of management concern for safety.

### Scope of Investigation

The scope of the investigation can be divided into four areas:

Personnel

Technique

The Environment

Organization

In each of these areas, actions of omission may be identified which could be a factor contributing to the accident or subsequent injury, damage or loss.

Establishment of the fact

In establishing the fact(s) of an accident, we would consider the followings as necessary factors:

Background information that would be considered,

the procedure for this type of operations

command structure

the person involved

Facts collection

Facts collection shall include but not limited to topography, weather, warning signs / notices, condition of the equipment, housekeeping, before interview can be conducted.

## ACCIDENT REPORT AND INVESTIGATION

### (Standard report form)

Date: ----- Time: -----/AM/PM -----

Location: ----- Department: -----

Supervisor: -----

Name of Victim: -----

Nationality: ----- Address: -----

Marital Status: ----- Occupation:-----

Date of Birth: ----- Experience (years):-----

Equipment/tools being used when accident occurred:-----  
-----  
-----

Description of accident:-----  
-----  
-----

Name of Witness (if any): -----  
-----

Conditions during accident: weather- dry, rain, clear, dusk, dark etc.

Unsafe acts, actions and conditions (Please describe):-----  
-----  
-----

Report verification by:

Name: -----Date: -----

## ANNEXURE: S

### WASTE MANAGEMENT PLAN (SAMPLE)

| Project Activity                                               | Potential Impact                            | Proposed Measures/<br>Mitigation<br>Actions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Responsibility for mitigation                                                    |
|----------------------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <b>I. Pre-Construction Phase</b>                               |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                  |
| Use of Workers Camp/Site Office                                | Generation of sanitary waste                | <ul style="list-style-type: none"> <li>Ensure provision of sanitary facilities on site for workers and enforce usage.</li> <li>Ensure usage of Ekiti waste management agency</li> <li>approved waste vendor for waste evacuation &amp; disposal.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                     | Contractor                                                                       |
| Movement of plant & equipment to and from staging area to site | Soil contamination                          | <ul style="list-style-type: none"> <li>Develop and implement a site- specific Waste Management Plan (WMP)</li> <li>Prepare and implement an Emergency Response Plan to respond to incident of spillage. Ensure fuel storage tanks are installed in a bonded area and checked daily.</li> <li>Ensure regular maintenance of vehicles to avoid leaks of oil. Prevent unregulated dumping of fuel waste</li> <li>Ensure local communities are sensitized on need to avoid tampering with waste bins</li> </ul>                                                                                                                     | Contractor                                                                       |
| Use of workers camp/site office                                | Sanitation issues and public health impacts | <ul style="list-style-type: none"> <li>Provide trash bins on site for temporary storage of domestic waste such as lubricant containers, drinking water sachets and carrier bags/packaging materials.</li> <li>Dispose all construction and domestic waste at the approved dumpsites and in the approved manner.</li> <li>Ensure all trenches or excavations made during the construction works do not collect stagnant water, which could breed mosquitoes.</li> <li>Ensure access to toilets for construction crew or provide temporary toilets (mobile</li> <li>toilets) for use where there are no existing ones.</li> </ul> | Contractor/<br>Engineering Consultant<br><br>Environmental Safeguards Specialist |
|                                                                |                                             | <ul style="list-style-type: none"> <li>Ensure mobile toilets/sanitary provisions are provided to reflect gender types.</li> <li>Ensure regular toolbox meetings are held among contractor workers to offer awareness on transmission of contagious or communicable</li> <li>diseases.</li> </ul>                                                                                                                                                                                                                                                                                                                                |                                                                                  |

|                                                                             |                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                      |            |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Construction work activities                                                | Generation of construction waste including spoils, debris and concrete | <ul style="list-style-type: none"> <li>• Develop and implement a site- specific Waste Management Plan (WMP) to include the following:</li> <li>• Ensure segregation of waste to facilitate reuse and recycling opportunities.</li> <li>• Ensure no burning of waste on site.</li> <li>• Ensure usage of approved waste vendor for</li> <li>• waste evacuation, processing &amp; disposal.</li> </ul> | Contractor |
| Operation of workers camp/site office prior to demobilization of facilities | Generation of sanitary waste from worker's camp                        | <ul style="list-style-type: none"> <li>• Ensure provision of sanitary facilities on site for workers and enforce usage.</li> <li>• Ensure usage of approved waste vendor for waste evacuation &amp; disposal.</li> </ul>                                                                                                                                                                             | Contractor |
| Commissioning of library & buildings                                        | Generation of construction waste and debris                            | <ul style="list-style-type: none"> <li>• Develop and implement a site- specific Waste Management Plan (WMP) to include the following:</li> <li>• Ensure segregation of waste to facilitate reuse and recycling opportunities.</li> <li>• Site visit at the completion of project to ensure no waste is left behind.</li> </ul>                                                                       | Contractor |

## ANNEXURE: T

### SECURITY MANAGEMENT PLAN (SAMPLE)

The contractor shall pay necessary attention to ensuring security of life & property during the execution of this contract according to the scope of works. In ensuring that this role is carried out, the following will be given priority:

#### 1. Management Commitment and Responsibilities

Management is committed to ensuring that the following are in place:

- Providing up to date information regarding the security management mechanism, tools & updates in and around the work sites
- Ensure necessary early warning system is deployed to respond to security emergencies in the workplace by:
  - Development of a specific step-by-step approach to security response
  - Establish a security task force to respond to specific hazards, which is to be deployed in the case of security emergency (kidnapping, insurgency etc.)
- Employing appropriate personnel for the role of security personnel/advisor(s) and security staff
- Prioritize training of security personnel
- Enforcing disciplinary actions as needed to enforce security compliance
- Promoting interaction and assistance with regulatory and response agencies

#### 2. Threat Assessment and Analysis

A vital component of this Security Management Plan is the identification of internal and external threats. The mechanisms for identifying threats shall comprise but will not be limited to:

- Have in place and periodically update a threat matrix that will be submitted to management for review and approval.
- Undertake periodic drills that will include responses to:
  - Knife or gun threats
  - A violence in the workplace situation - potential or actual
  - Domestic violence occurring within our facilities
  - General evacuation requirements due to a technical, human or natural threat
  - Others may be determined by the General Manager or Security Management Committee

Threats will be qualified utilizing a threat matrix, or other tool that compares operations to threats, and their likelihood and severity. Where possible, mitigating actions and recommendations will be initiated.

#### 3. The Role of the Security Focal Person or Manager

In the minimum, the contractor will have a security manager or focal staff that will be responsible for all security related issues in the workplace. The role of this security focal person includes:

#### 4. Lead role in threat assessments

- Program maintenance and updates
- Incident response and coordination
- Chair of the Security Program Committee
- Training Responsibilities

- Coordination with other Departments
- Coordination with agencies and response units

## **5. Employee security education and training**

The company-training security program will ensure:

- Employee duties and responsibilities
- Event-specific responsibilities
- Threat or event reporting
- Back-to-work/check-in requirements
- Potential disciplinary actions
- Dealing with the media, regulatory agencies, or other entities outside the company

## **6. Management and Supervisor Education and Training**

For Managers and Supervisors, our program focuses upon:

- Individual or Department duties
- Knowledge and deployment of response protocols
- Assuring employee and other constituent welfare
- Threat or event reporting
- Back-to-work/check-in requirements
- Potential disciplinary actions
- Dealing with the media, regulatory agencies, or other entities outside the company

## **7. Program Exercises and Drills**

The training and education activities that will be undertaken for the purposes of implementing this Security Management Plan shall be one of the following: case studies, table top exercises, or small and/or large scale exercises involving response pattern to adopt in the face of clear and present threats e.g. insurgent attacks.

The hiring of the Security Management consultant is in process under the PIU IFRAP (Component-I), the consultant will ensure that the project and contractor staff receive ESS4-specific training on human rights and use of force along with the security of the personals involved in the civil works.

The consultant will work on the code of conduct for the security personnel, public security arrangements and training requirements.

## ANNEXURE: U

### CONTRACTORS COVID-19 COMPLIANCE GUIDELINES (SAMPLE)

1. Conduct off-site safety trainings to ensure all employees are aware of the job hazards. The emphasis of this training is on the COVID19 awareness.
2. Contractor is to carry out screening of personnel to determine if any of them is sick or showing any COVID19 related symptoms before any of them is allowed into the work site.
3. Proper education of workforce and enforcement of social distancing protocols on site. Effective social distancing practices must be included in the training plan prior to deployment of the workforce to site.
4. Education should include use of tools; Tools and equipment are not to be shared, where possible. Touch points on tools should be properly wiped down with disinfectant prior to hand over to next shift.
5. Workers are to be encouraged to wash hands comprehensively for at least 30 seconds immediately they are about to enter the worksite.
6. In addition, the following social distancing practices can be included in the workers camp:
  - a. Break time can be staggered so that not all workers will be away to the canteen or eating area at the same time
  - b. Use of the bathrooms and toilets need to be staggered to prevent crowding.
  - c. Work hours can also be staggered to ensure no overcrowding
  - d. Provision of entry and exit points from workers camp and site to ensure minimum contact during shift change.
  - e. Prevention of visits from family and friends from workers camp and work site
  - f. Improve access control to and from the workers camp and works site. Consider the use of personal identification cards that should be presented to grant access.
7. Education and enforcement of handwashing, sanitizing and other hygienic practices.
8. A record of who is on the work site and when needs to be available and with the shift supervisor at all times. This is so that in the event of a worker contracting COVID19, these records will be utilized to inform those who may have come into contact with this person (contact tracing).
9. Contractor to create an isolation area within the sick bay that can offer initial response.
10. Sick bay and health officers in the workers camp are to have the phone numbers and contact details of NCDC for confirmed cases that require evacuation from site.
11. Contractor should ensure the regular disinfecting and cleaning of the following surfaces several times a day; tables, chairs, doorknobs, Light switches, phones, toilets, taps and

sinks.

12. Remind workforce of need to follow the protocols, especially washing of hands and to keep common areas and tools, clean.
13. When departing the worksite, workers are to:
  - a. Wash hands properly before departing site
  - b. Retain PPE on site
  - c. Maintain social distancing as you depart

## ANNEXURE: V

### **TREE REPLANTATION PLAN (SAMPLE)**

#### **1. Objective**

The Tree Replantation Plan aims to compensate for vegetation loss due to construction activities and to restore ecological balance in accordance with World Bank Environmental and Social Standard (ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources). The plan also supports slope stabilization, erosion control, and improvement of local microclimatic conditions.

#### **2. Tree Inventory and Clearance**

Prior to commencement of works, a detailed tree inventory will be conducted within the project footprint, documenting species, size, location, and condition of trees likely to be affected. Tree removal will be minimized through design optimization and will only be undertaken after obtaining necessary approvals from relevant Forest and Environmental Authorities.

#### **3. Compensatory Plantation Strategy**

Compensatory plantation will be carried out at a minimum ratio of **1:5 (or higher as per regulatory and World Bank requirements)**. Plantation will prioritize indigenous and site-specific species with high survival rates and ecological value. The plantation will be undertaken along the bund alignment (where feasible), downstream areas, and in designated community or government land in consultation with local stakeholders and Forest Department GoB.

#### **4. Species Selection and Plantation Design**

Selection of species will be based on local agro-climatic conditions, soil characteristics, and ecological suitability. Preference will be given to native, drought-resistant, and flood-tolerant species that contribute to bank stabilization and biodiversity enhancement. Proper spacing, pit preparation, and soil conditioning will be ensured to support healthy plant growth.

#### **5. Implementation Arrangements**

The Contractor will be responsible for implementation of plantation activities, including site preparation, procurement of saplings, planting, and initial maintenance. The Project Consultants (PCs) will oversee execution and ensure compliance with approved specifications. The Project Implementation Unit (PIU) will monitor overall implementation and reporting in line with ESMP requirements.

#### **6. Maintenance and Survival Management**

A maintenance period of minimum three (03) years will be ensured, including watering, weeding, mulching, fertilization, and protection through fencing or tree guards. Dead or unhealthy saplings will be replaced to achieve a minimum survival rate of 80% or above.

#### **7. Environmental Monitoring and Reporting**

Regular monitoring will be conducted to assess plantation progress, survival rates, and overall effectiveness. Monitoring indicators will include number of trees planted, survival percentage, and health condition. The Contractor will submit periodic reports, which will be verified by the Supervision Consultant and consolidated by the PIU for submission to the World Bank.

#### **8. Community Participation and Awareness**

Local communities will be engaged in plantation activities where feasible to enhance ownership and sustainability. Awareness programs will be conducted to promote environmental conservation and protection of planted areas.

### **9. Budget Provision**

Adequate budgetary allocation will be ensured within the ESMP for plantation, maintenance, monitoring, and replacement of saplings throughout the defined maintenance period.

## ANNEXURE: W

### **STAKEHOLDERS ENGAGEMENT PLAN (SAMPLE)**

#### **1. Introduction**

This Stakeholder and Worker Consultation Plan has been prepared as an annexure to the Environmental and Social Management Plan (ESMP) for the proposed subproject. The plan provides a structured approach for informing, consulting, and engaging local communities, project-affected persons, vulnerable groups, relevant institutions, contractor workers, subcontractor workers, and other project personnel during the pre-construction, construction, and post-construction stages.

Stakeholder and worker consultation is essential for identifying environmental, social, labour, occupational health and safety, and community health and safety concerns. It also supports effective implementation of mitigation measures, improves transparency, strengthens community acceptance, and provides a clear mechanism for recording and addressing grievances.

#### **2. Objectives**

The objectives of this plan are to:

1. Identify stakeholders and workers who may be affected by or have an interest in the project.
2. Disclose project information, including project scope, construction activities, expected impacts, mitigation measures, and grievance procedures.
3. Obtain feedback from local communities, affected persons, vulnerable groups, relevant departments, and project workers.
4. Ensure meaningful participation of women, poor households, elderly persons, persons with disabilities, daily wage workers, and other vulnerable groups.
5. Consult workers on labour conditions, occupational health and safety, welfare facilities, code of conduct, and worker grievance arrangements.
6. Link community and worker consultations with the respective grievance redress mechanisms.
7. Document issues raised during consultations and incorporate relevant feedback into ESMP implementation.

#### **3. Stakeholder and Worker Identification**

The key stakeholders and workers to be consulted are summarized below.

| Category                       | Stakeholders / Workers                                                                                                                                                                                                                 |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Primary community stakeholders | Local communities, nearby residents, affected persons/households, farmers, land users, shopkeepers/businesses, road users, women, children, elderly persons, persons with disabilities, vulnerable households, and local labour.       |
| Institutional stakeholders     | Local administration, relevant line departments, Environmental Protection Agency, local elected representatives, community elders, NGOs/CBOs where active, health and education facilities, police/traffic authorities where relevant. |

| Category                            | Stakeholders / Workers                                                                                                                                                                         |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project implementation stakeholders | Project Implementation Unit / Executing Agency, Supervision Consultant, Contractor, subcontractors, suppliers and service providers.                                                           |
| Project workers                     | Contractor workers, subcontractor workers, skilled and unskilled labour, drivers, machine operators, security staff, camp staff, HSE staff, community liaison staff, and other site personnel. |

#### 4. Consultation Principles

Consultations shall be carried out in accordance with the following principles:

| Principle                | Application                                                                                                                              |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Inclusiveness            | All relevant groups, including affected persons, vulnerable groups, women, and workers, shall be provided an opportunity to participate. |
| Transparency             | Project information shall be shared in a timely, clear, and understandable manner.                                                       |
| Cultural appropriateness | Consultations shall be conducted in the local language and in a socially acceptable manner.                                              |
| Accessibility            | Meetings shall be held at suitable locations and times convenient for communities and workers.                                           |
| Gender sensitivity       | Separate consultations with women shall be arranged where local conditions require.                                                      |
| Worker protection        | Workers shall be allowed to raise concerns related to working conditions, safety, welfare, and grievances without retaliation.           |
| Documentation            | All meetings, issues raised, responses provided, and agreed actions shall be properly recorded.                                          |
| Feedback integration     | Relevant feedback shall be reviewed and incorporated into ESMP implementation, where appropriate.                                        |

#### 5. Consultation Methods

The following methods shall be used depending on the stakeholder group, project stage, and nature of issues to be discussed.

| Method                   | Purpose                                                                                                                                         |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Community meetings       | Disclosure of project information and collection of feedback from local communities and affected persons.                                       |
| Focus group discussions  | Consultation with specific groups such as women, farmers, youth, vulnerable persons, local labour, or businesses.                               |
| Key informant interviews | Consultation with community elders, local representatives, government officials, teachers, health workers, and other informed persons.          |
| Household consultations  | Consultation with directly affected or vulnerable households who may not be able to attend public meetings.                                     |
| Site meetings            | Discussion of site-specific issues such as access, traffic, safety, dust, noise, spoil disposal, utility disruption, and temporary disturbance. |

| Method                          | Purpose                                                                                                                                        |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Worker induction sessions       | Orientation of workers on ESMP requirements, OHS, PPE, code of conduct, emergency response, labour rights, and worker grievance procedure.     |
| Toolbox talks / safety meetings | Regular communication with workers on activity-specific risks, safe work procedures, traffic safety, waste management, and incident reporting. |
| Awareness sessions              | Information sharing with communities and workers on traffic safety, GBV/SEA/SH, GRM, OHS, waste management, and emergency response.            |
| Information boards / notices    | Disclosure of project details, construction schedule, safety instructions, contact persons, and grievance procedure.                           |

## 6. Key Consultation Topics

### 6.1 Environmental Issues

Consultations with communities, local representatives, institutions, and workers shall cover the following environmental issues, as applicable:

- Dust generation and water sprinkling requirements.
- Noise and vibration from construction machinery and vehicles.
- Waste collection, segregation, handling, and disposal.
- Handling of fuel, oils, lubricants, and minor hazardous waste.
- Protection of water bodies, drains, irrigation channels, agricultural land, and community assets.
- Erosion control, spoil disposal, borrow areas, and site restoration.
- Tree cutting, vegetation disturbance, and restoration measures, where applicable.

### 6.2 Social and Community Issues

Community consultations shall cover the following social issues:

- Community health and safety during construction.
- Traffic management, access restrictions, and movement of machinery.
- Temporary disturbance to houses, shops, fields, roads, public facilities, or services.
- Employment opportunities for local labour.
- Labour influx and worker behaviour.
- Code of conduct for workers and site staff.
- Protection of women, children, elderly persons, and vulnerable groups.
- GBV/SEA/SH awareness and confidential complaint handling.
- Grievance Redress Mechanism for communities.
- Damage to private, public, or community assets, if any.

### 6.3 Worker Issues

Worker consultations shall cover the following:

- Terms and conditions of employment, wages, working hours, rest periods, leave, and payment arrangements.
- Occupational health and safety risks associated with assigned work.
- Use of personal protective equipment and safe work procedures.
- Emergency response, first aid, accident reporting, and incident investigation.
- Worker accommodation, sanitation, drinking water, rest areas, and welfare facilities, where applicable.
- Code of conduct, respectful behaviour, prevention of harassment, and GBV/SEA/SH awareness.
- Waste management, housekeeping, site access control, and traffic safety.
- Availability of a worker grievance mechanism.
- Right of workers to raise concerns without intimidation, discrimination, or retaliation.

## 7. Stakeholder and Worker Consultation Schedule

| Project Stage    | Stakeholders / Workers                                                                            | Method                         | Key Topics                                                                                           | Frequency / Timing        | Responsibility                                |
|------------------|---------------------------------------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------|
| Pre-construction | Local communities, affected persons, community elders, local representatives                      | Community meeting              | Project scope, benefits, construction schedule, expected impacts, mitigation measures, community GRM | Before start of works     | PIU / Supervision Consultant / Contractor     |
| Pre-construction | Women, vulnerable households, elderly persons, persons with disabilities                          | FGD / household consultation   | Access, safety, social concerns, gender issues, vulnerable group concerns, grievance process         | Before start of works     | Social Specialist / Community Liaison Officer |
| Pre-construction | Local administration and line departments                                                         | Coordination meeting           | Permissions, traffic arrangements, utility coordination, public safety, emergency response           | Before mobilization       | PIU / Supervision Consultant                  |
| Pre-construction | Contractor workers, subcontractor workers, drivers, machine operators, security staff, camp staff | Worker induction / orientation | ESMP, OHS, PPE, code of conduct, emergency response, labour conditions, worker GRM, GBV/SEA/SH       | Before deployment at site | Contractor / HSE Officer                      |
| Construction     | Communities near active work sites                                                                | Community/site meetings        | Dust, noise, access, traffic, safety, construction schedule, complaints                              | Monthly or as required    | Contractor / Community Liaison Officer        |
| Construction     | Directly affected households, land users, road users, businesses                                  | Household visit / site meeting | Temporary impacts, access arrangements, damages, restoration, traffic management                     | As required               | Contractor / Supervision Consultant           |

| Project Stage     | Stakeholders / Workers                      | Method                                | Key Topics                                                                                            | Frequency / Timing                      | Responsibility                                |
|-------------------|---------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------------------------------|
| Construction      | Women and vulnerable groups                 | Separate FGD / targeted consultation  | Safety, mobility, labour influx, harassment risks, access to GRM                                      | Quarterly                               | Social Specialist / Community Liaison Officer |
| Construction      | Contractor and subcontractor workers        | Toolbox talks / safety meetings       | OHS, PPE, activity-specific risks, first aid, emergency response, waste management, traffic safety    | Monthly and before high-risk activities | Contractor / HSE Officer                      |
| Construction      | Workers and camp staff, where applicable    | Worker consultation / welfare meeting | Working conditions, accommodation, sanitation, drinking water, rest areas, complaints, worker welfare | Monthly or as required                  | Contractor / HSE Officer                      |
| Construction      | Local administration / relevant departments | Coordination meeting                  | Traffic, utilities, public complaints, emergency response, law and order                              | Quarterly or as required                | PIU / Supervision Consultant                  |
| Post-construction | Local communities and representatives       | Feedback meeting                      | Site restoration, residual impacts, pending grievances, project benefits                              | After completion of works               | PIU / Supervision Consultant                  |
| Post-construction | Workers demobilized from site               | Exit briefing / worker feedback       | Final payments, grievance closure, safety close-out, return of camp/site facilities                   | At demobilization                       | Contractor                                    |
| Post-construction | O&M agency / line department                | Handover meeting                      | O&M-stage environmental and social responsibilities, unresolved issues, monitoring needs              | At handover                             | PIU / O&M Agency                              |

## 8. Consultation with Vulnerable Groups

Special attention shall be given to vulnerable and disadvantaged groups, including poor households, female-headed households, elderly persons, persons with disabilities, landless labourers, daily wage workers, and households living close to active construction areas.

The following measures shall be adopted:

1. Separate consultations shall be arranged where mixed public meetings may restrict participation.
2. Consultations shall be conducted in the local language.
3. Meeting venues shall be easily accessible and selected in consultation with the community.
4. Female participation shall be facilitated through female staff or local women facilitators, where required.
5. Views of vulnerable groups shall be separately recorded and considered in ESMP implementation.
6. Grievance registration shall be accessible, confidential where needed, and free from retaliation.

7. Project information shall be explained verbally where literacy levels are low.

## 9. Consultation with Workers

Workers engaged by the Contractor, subcontractors, suppliers, and service providers shall be treated as key project stakeholders. Worker consultation shall be carried out to identify and address labour-related risks, occupational health and safety issues, workplace concerns, welfare matters, and grievances during implementation.

Worker consultations shall be conducted through induction sessions, toolbox talks, safety meetings, awareness sessions, camp/welfare meetings, and confidential discussions where required. These consultations shall explain workers' responsibilities, rights, working conditions, health and safety requirements, code of conduct, emergency procedures, and access to the worker grievance mechanism.

The Contractor shall ensure that workers are informed about the following:

- Nature of assigned work and associated safety risks.
- Requirement to use PPE and follow safe work procedures.
- Availability of first-aid, emergency response, and accident reporting arrangements.
- Working hours, wage payment arrangements, rest breaks, and leave procedures.
- Site rules, camp rules, sanitation arrangements, drinking water, and welfare facilities.
- Prohibition of harassment, child labour, forced labour, discrimination, and misconduct.
- Worker grievance mechanism and confidential reporting channels.
- Right to raise workplace concerns without retaliation.

A separate worker grievance register shall be maintained at the project site. Sensitive complaints, including harassment or GBV/SEA/SH-related matters, shall be handled confidentially and referred to appropriate channels in accordance with the project's labour management and GBV/SEA/SH procedures.

## 10. Roles and Responsibilities

| Institution / Person                           | Key Responsibilities                                                                                                                                                                                  |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project Implementation Unit / Executing Agency | Overall responsibility for stakeholder engagement, information disclosure, grievance redress, and incorporation of consultation feedback into ESMP implementation.                                    |
| Environmental Specialist                       | Explain environmental impacts and mitigation measures, support environmental consultations, and assist in compliance monitoring.                                                                      |
| Social Safeguards Specialist                   | Conduct social consultations, vulnerable group consultations, gender consultations, GRM awareness, and social impact monitoring.                                                                      |
| Supervision Consultant                         | Supervise consultation activities, verify records, monitor implementation of agreed actions, and report compliance.                                                                                   |
| Contractor                                     | Conduct site-level community and worker consultations, inform communities about construction schedules, maintain information boards, implement mitigation measures, and support grievance resolution. |

| Institution / Person                    | Key Responsibilities                                                                                                           |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| HSE Officer                             | Conduct worker induction, toolbox talks, OHS awareness, emergency response drills, safety inspections, and accident reporting. |
| Community Liaison Officer               | Maintain regular contact with communities, register complaints, support consultations, and assist in resolving local issues.   |
| Worker Representative / Site Supervisor | Communicate worker concerns to Contractor management and support implementation of safety and welfare measures.                |
| Local administration / community elders | Support community coordination, public meetings, local dispute resolution, and dissemination of information.                   |

## 11. Information Disclosure

Project information shall be disclosed in a simple, understandable, and locally appropriate manner. Information shall be provided to communities, workers, and relevant institutions through meetings, notices, information boards, verbal briefings, and coordination with local representatives.

The following information shall be disclosed:

- Project name, location, and scope of works.
- Construction schedule and major activities.
- Expected environmental, social, and safety impacts.
- Mitigation measures proposed in the ESMP.
- Community health and safety precautions.
- Traffic and access management arrangements.
- Worker code of conduct and labour behaviour requirements.
- Community Grievance Redress Mechanism.
- Worker grievance mechanism.
- Contact details of responsible project staff.

Information boards shall be installed at visible locations near the work site and shall include emergency contact numbers, grievance focal person details, safety instructions, and basic project information.

## 12. Grievance Redress Linkage

The consultation process shall be linked with both the community Grievance Redress Mechanism and the worker grievance mechanism.

### 12.1 Community Grievance Mechanism

Communities and affected persons shall be informed about:

1. How and where to submit complaints.
2. Name and contact of the grievance focal person.

3. Expected timeline for complaint resolution.
4. Escalation procedure if the complaint is not resolved at site level.
5. Confidential handling of sensitive complaints, including GBV/SEA/SH-related matters.
6. Assurance that complaints can be submitted without fear of retaliation.

## 12.2 Worker Grievance Mechanism

Workers shall be informed about:

1. How to submit labour, wage, safety, welfare, or workplace-related complaints.
2. Availability of confidential reporting for sensitive issues.
3. Timelines for review and resolution.
4. Protection against retaliation for raising concerns.
5. Escalation procedure if complaints are not resolved by the Contractor.

Separate registers shall be maintained for community grievances and worker grievances. Each register shall include complaint number, date, complainant details if provided, nature of complaint, action taken, responsible person, resolution date, and status.

## 13. Documentation and Reporting

All consultation activities shall be documented and included in monthly or periodic ESMP compliance reports. Records shall include:

- Date, time, and venue of consultation.
- Type of consultation.
- List of participants, with gender-disaggregated data where possible.
- Worker category and number of workers consulted, where applicable.
- Photographs, where appropriate.
- Key issues raised.
- Responses provided by the project team.
- Agreed actions and responsible persons.
- Follow-up requirements.
- Status of community and worker grievances.
- Corrective actions taken.

The Supervision Consultant shall verify consultation records during site inspections and include consultation progress in ESMP compliance reporting.

## 14. Consultation Record Format

| Item         | Details |
|--------------|---------|
| Project name |         |

|                               |                                                                                                            |
|-------------------------------|------------------------------------------------------------------------------------------------------------|
| Location / village / worksite |                                                                                                            |
| Date and time                 |                                                                                                            |
| Type of consultation          | Community meeting / FGD / KII / household consultation / worker consultation / toolbox talk / site meeting |
| Participants                  | Men: ____ Women: ____ Workers: ____ Total: ____                                                            |
| Stakeholder / worker group    | Community / affected persons / women / vulnerable group / workers / local administration                   |
| Main issues discussed         |                                                                                                            |
| Concerns raised               |                                                                                                            |
| Response provided             |                                                                                                            |
| Agreed actions                |                                                                                                            |
| Responsible person            |                                                                                                            |
| Timeline for action           |                                                                                                            |
| Follow-up required            | Yes / No                                                                                                   |
| Prepared by / signature       |                                                                                                            |

### 15. Attendance Sheet Format

| Sr. No. | Name | Designation / Village / Worker Category | Gender | Contact No. | Signature / Thumb Impression |
|---------|------|-----------------------------------------|--------|-------------|------------------------------|
| 1       |      |                                         |        |             |                              |
| 2       |      |                                         |        |             |                              |
| 3       |      |                                         |        |             |                              |
| 4       |      |                                         |        |             |                              |
| 5       |      |                                         |        |             |                              |

### 16. Monitoring Indicators

| Indicator                                                                | Frequency                      | Responsibility                                |
|--------------------------------------------------------------------------|--------------------------------|-----------------------------------------------|
| Number of community consultation meetings conducted                      | Monthly / quarterly            | Social Specialist / Community Liaison Officer |
| Number of participants consulted, including women and vulnerable persons | Each consultation              | Community Liaison Officer                     |
| Number of worker induction sessions conducted                            | At mobilization and new hiring | Contractor / HSE Officer                      |
| Number of toolbox talks and safety meetings conducted                    | Monthly / activity-based       | Contractor / HSE Officer                      |
| Number of community grievances received and resolved                     | Monthly                        | Contractor / PIU                              |
| Number of worker grievances received and resolved                        | Monthly                        | Contractor / HSE Officer                      |

| Indicator                                                               | Frequency            | Responsibility                  |
|-------------------------------------------------------------------------|----------------------|---------------------------------|
| Number of awareness sessions on OHS, GRM, traffic safety and GBV/SEA/SH | Monthly / quarterly  | HSE Officer / Social Specialist |
| Public information boards installed and maintained                      | Monthly verification | Contractor                      |
| Consultation records included in ESMP reports                           | Monthly              | Supervision Consultant          |

## 17. Budget Provision

The cost of stakeholder and worker consultation has been included under the ESMP budget heads for community consultation and GRM, worker awareness, social and environmental impact monitoring, training and capacity building, documentation, and community liaison support.

The budget shall cover meeting arrangements, local travel, communication, printing of notices, worker induction materials, awareness sessions, photographic documentation, grievance documentation, and follow-up consultations. Costs related to worker safety training, PPE awareness, toolbox talks, and worker welfare communication shall be included in the Contractor's ESMP implementation obligations.

**ANNEXURE: X**  
**PICTORIAL RECORD OF CONSULTATION MEETINGS WITH COMMUNITY ELDERS AND MEMBERS**



ANNEXURE: Y

**WORKPLAN / IMPLEMENTATION SCHEDULE**

