



PROJECT IMPLEMENTATION UNIT (PIU)



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

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)



PACKAGE-VI

RESTORATION OF FLOOD PROTECTION BUND GANDAVA TOWN LEFT AND RIGHT-SIDE, DISTRICT JHAL MAGSI

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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 (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 Restoration of Flood Protection Bund Gandava Town left and right side, in District Jhal Magsi is one of the sub-projects being implemented under Package-VI of IFRAP to protect local settlements and agricultural lands from recurrent flood events.

The Restoration of Flood Protection Bund Gandava Town (left and right side), District Jhal Magsi, lies at approximately 28°36'57.15"N and 67°28'47.13"E near Gandava (Main City), Syed Farooq, Siddiq Muhallah, Darga Town and surrounding rural settlements. The works comprise restoration/strengthening of the existing flood protection bund, including site clearance within the approved footprint, earthwork excavation and filling, layer-wise compaction, dressing of bund top and side slopes, UV-stabilized polypropylene geotextile, stone pitching, gabion/apron protection along the toe, erosion/scour protection and restoration of temporary work areas. Design parameters recorded for the scheme include a catchment area of about 8,136 km², crest width of 6.0 m, side slopes of 2H:1V and scour depth of 3.20 m, subject to the final approved engineering drawings and specifications.

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 and flood resilience of flood-affected communities in Jhal Magsi 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 Restoration of Flood Protection Bund Gandava Town lies within the Mula / Kachhi plain floodplain setting, characterized by semi-arid climate, low vegetation cover, alluvial deposits and periodic flash-flood flows from hill torrents and seasonal drainage channels. Groundwater is limited and variable in quality, while surrounding communities depend mainly on agriculture, livestock and local services. No protected ecological habitat, notified forest, wetland or significant cultural heritage site has been identified within the approved works 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.

Downstream and adjacent-area flood risks have been explicitly assessed for this sub-project. Although the restoration of the Gandava FPB is intended to reduce flood exposure, adverse scenarios such as embankment overtopping, piping, settlement, toe scour, slope erosion, blockage of seasonal drainage paths, poor compaction or localized breach could increase flooding, ponding, erosion, sediment deposition or access disruption for nearby settlements and agricultural land if not properly managed.

Sub-project-specific social risks also include temporary disruption of community access and informal crossings to fields, houses, markets, schools, mosques and grazing areas, and possible disputes among upstream/downstream landowners or drainage/flood-flow users if temporary construction arrangements are perceived to obstruct or divert flows.

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.

Use of quantitative monitoring indicators with baseline, target/compliance standard, unit, frequency and responsibility for embankment stability, drainage continuity, sediment/spoil handling, borrow areas, air, noise, OHS, CHS, access, GRM, security and water/drainage complaints.

Implementation of a sediment testing, reuse and disposal protocol for excavated silt/spoil or borrow materials where contamination is suspected or where material is proposed for reuse in embankment works.

Maintenance of safe community access through mapping of existing crossings/tracks, provision of temporary crossings or alternative routes, advance public notice and emergency access at all times.

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 ESMP will be integrated into the overall project budget to ensure sustainable and compliant implementation.

9. CONCLUSION

The Restoration of Flood Protection Bund Gandava Town left and right side represents a critical intervention for enhancing flood resilience and protecting vulnerable communities in Jhal Magsi 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.

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.
- ii. Reconstruction/rehabilitation of FIS/PIS and irrigation infrastructure to ensure regular and sustainable water supplies to crops to safeguard food security and livelihood of the concerned population.

- iii. Reconstruction, rehabilitation and improvement of flood protection facilities for preventing future flood damages to private and public infrastructure, besides, losses to human lives.
- iv. Rehabilitation of the storages structures/dams and strengthening/remodeling of their allied components, especially Spillways to ensure sustained water availability for the command area.
- v. To restore the productivity of the irrigation system back to the desired levels.

1.3 PROJECT SCOPE

Total thirty-five (35) sub-projects located in 19 Districts fulfilled the selection criteria as shown in Figure -1-1 below, hence selected for design and implementation under IFRAP (C-I), which includes Gandava FPB. Detail of sub-projects are mentioned in Section 1.1 above. A map showing the location of sub-projects is given in the following Figure-1.1

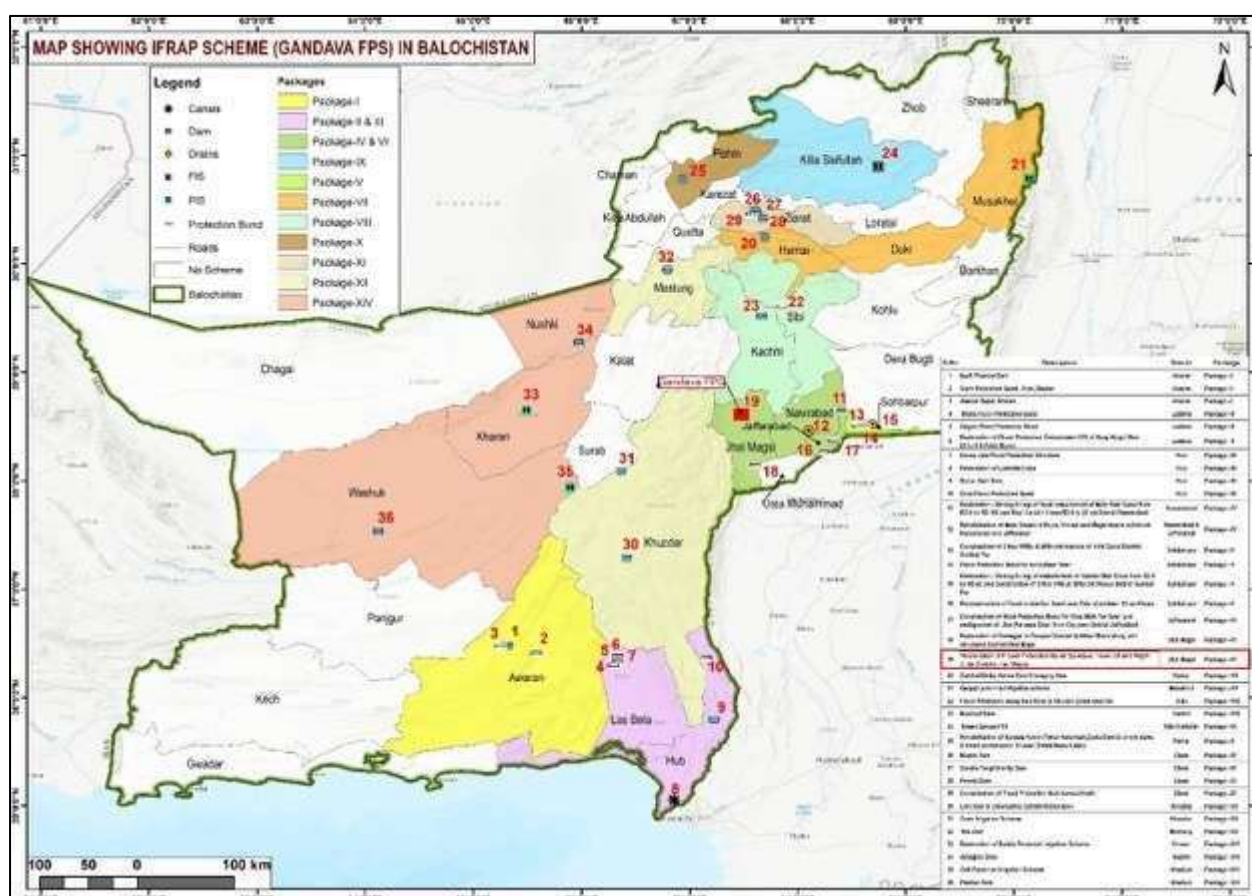


Figure 1-1: Location map showing the sites of sub-projects

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, Restoration of Flood Protection Bund at Gandava Town (FPB), is located in District Jhal Magsi at approximately 28°36'57.15"N and 67°28'47.13"E, Balochistan. Nearby settlements include Gandava (Main City), Syed Farooq, Siddiq Muhallah, Darga Town and surrounding rural communities. The proposed scheme consists of rehabilitation and strengthening of the existing earthen flood protection bund to restore structural stability and flood protection capacity, including slope protection, erosion/scour control, gabion/apron protection and restoration of temporary work areas. The works will remain within the approved FPB footprint and associated temporary facilities approved by the CSC/PIU.

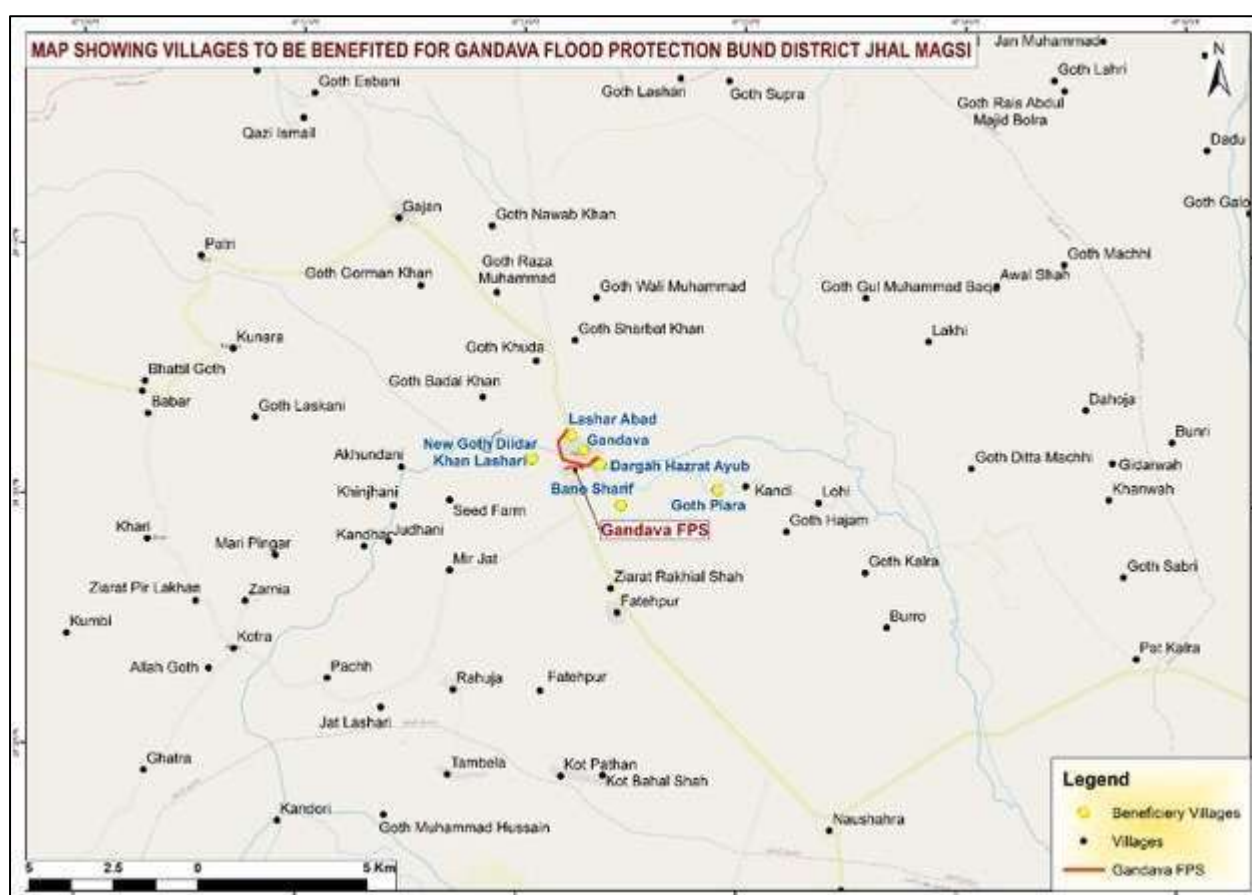


Figure 1-2: Map showing proximity to the project site

Table 1-2: Distance of nearby villages from the Gandava Town

Village Name	Number of households	Population	Distance from the Subproject Area
Gandava (Main City)	150	1050	0.50 km
Syed Farooq	15	105	2km
Siddiq Muhallah	25	175	1 km
Darga Town	35	245	0.5 km
Total	225	1575	

The sub-project is intended exclusively for flood protection purposes, focusing on rehabilitation and strengthening of the existing damaged Gandava Town flood protection bund to safely manage seasonal flood flows and protect adjoining settlements, agricultural lands and local infrastructure from inundation and erosion. The proposed intervention will improve community resilience while maintaining existing drainage/flood-flow paths and community access. The proposed sub-project does not lie within or near any notified protected area, conservation area, wetland, critical habitat or legally designated buffer zone.

1.7 PROPOSED ACTIVITIES

The proposed intervention includes rehabilitation/restoration of the existing Gandava Town Flood Protection Bund located within the approved project footprint to enhance flood resilience and safeguard adjacent communities, agricultural lands and infrastructure. The works will involve site clearance within the approved footprint, re-sectioning and strengthening of existing embankments, filling of breached/eroded sections with suitable compacted soil, dressing of the bund crest and

side slopes, placement of UV-stabilized polypropylene geotextile, stone pitching on the bund side slopes, gabion/apron protection along the toe, and site restoration after completion.

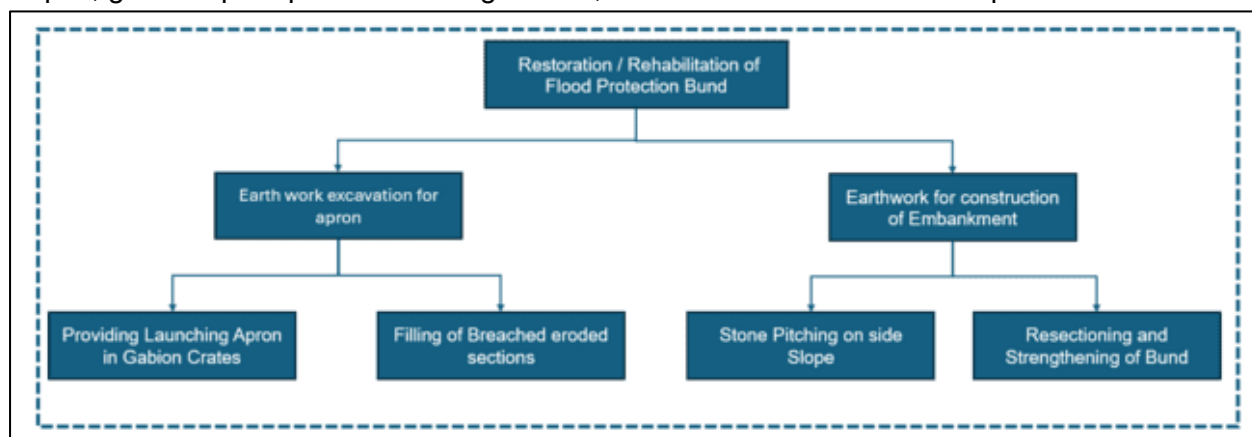


Figure 1-3: Project Activities

The following works have been proposed to restore and enhance the flood protection performance of the Gandava Town Flood Protection Bund.

Gandava Flood Protection Bund

The Gandava Flood Protection Bund comprises restoration and strengthening of the existing earthen flood protection bund on the left and right sides of Gandava Town. The bund will be tied into the existing flood protection system where required and protected through stone pitching, geotextile and gabion/apron works along vulnerable slopes and toes. The works are designed to reduce bank erosion, overtopping risk and uncontrolled spread of seasonal flood flows, while maintaining drainage continuity and safe community access during construction.

The details of engineering activities are provided in the Table 1-4 below.





Figure -1-4: Photographs of damaged Gandava FPB

Table 1-3: List of Construction Activities

Sr. No	Work Activities	List of Associated Construction Activities
1	Pre-construction activities	- Joint survey by the Consultant's and Contractor teams - Selection of suitable site for the establishment of contractor's camp - Construction of contractor camp - Relevant staff deployment for start of Work - Mobilization of machinery and equipment
2	During Construction Activities	- Site clearance/Grubbing Clearance and stripping. - Dismantling / Removal of Existing Bund, if needed. - Construction of Earthen Bund, dressing top and side slopes as per Construction Drawings. - Compaction of Earth Bunds. - Providing and laying of UV stabilized polypropylene Geotextile. - Providing and laying stone pitching of required Thickness on Bund side slopes. - Earthwork Excavation for providing Apron along Toe of Bund. - Providing and laying Apron at toe of bund. - Providing & weaving G.I wire and placing stones in GI Wire crates. - Maintaining community access, temporary crossings and safe diversion routes where existing tracks/crossings are affected. - Segregation, screening, testing (where required), reuse or disposal of excavated sediment/spoil as per ESMP protocol.

1.8 WORKPLAN / IMPLEMENTATION SCHEDULE OF ESMP

The implementation schedule for the Integrated Flood Resilience and Adaptation Project (IFRAP): Package VI: Construction of Flood Protection Bund for Dera Allah Yar Town and Realignment of Temple Main Drain from City Area, District Jaffarabad, has been prepared considering the proposed construction sequencing, safeguard implementation requirements, and overall project execution timeline. The overall implementation duration of the project is approximately **twenty-four (24) months**. The work plan encompasses procurement, contractor mobilization, construction activities, implementation of Environmental and Social Management Plan (ESMP)

measures, environmental and social monitoring and reporting, quality assurance documentation, project deliverables, and close-out activities.

The implementation schedule has been developed to ensure integrated execution of engineering works and environmental and social safeguard activities throughout the project lifecycle, in accordance with the World Bank Environmental and Social Framework (ESF) and the Project's Environmental and Social Commitment Plan (ESCP). Environmental compliance, occupational health and safety measures, community protection protocols, and ESMP monitoring and reporting obligations shall remain active and continuously enforced during all stages of construction, completion, and handover.

1.8.1 Bidding and Contract Award

This phase includes procurement activities comprising preparation and issuance of tender documents, tender floating, pre-bid meetings, bid submission, technical and financial evaluation, approval process, contract award, signing of agreement, and issuance of Notice to Commence. ESMP provisions, Environmental Codes of Practice (ECoPs), Occupational Health and Safety (OHS) requirements, and all applicable environmental and social obligations shall be incorporated into the contract documents before issuance, ensuring that the Contractor's obligations are contractually binding from the outset. Activities shall be carried out in accordance with applicable procurement procedures and project implementation requirements.

1.8.2 Contractor Mobilization

Mobilization activities include deployment of key technical, environmental, and social personnel; mobilization of construction machinery and equipment; establishment of site offices, labour camps, storage yards, borrow material staging areas, and on-site material testing laboratory facilities; preparation of the site-specific Contractor's ESMP (C-ESMP) including all required sub-plans (OHS Plan, Waste Management Plan, Traffic Management Plan, Labour Influx Plan, Camp Management Plan, Security Management Plan, and Emergency Action Plan); pre-construction access mapping and informal crossing survey along the FPB and drain alignments; and completion of pre-mobilisation community consultations with affected communities in Dera Allah Yar Town and surrounding settlements in District Jaffarabad. This phase ensures readiness of all technical, operational, environmental, and social management resources before commencement of construction works.

1.8.3 Construction of Flood Protection Bund for Dera Allah Yar Town, District Jaffarabad

1.8.3.1 Construction of Flood Protection Bund along Temple Drain (RD 000 to RD 6565)

Earthwork activities include excavation, embankment formation, filling, moisture conditioning, layer-wise compaction, shaping, and trimming of bund sections along the Temple Drain alignment from RD 000 to RD 6565, in accordance with approved drawings and design specifications, to achieve the required embankment density, stability, and flood protection performance. Stone pitching on bund side slopes, UV-stabilised polypropylene geotextile placement, and gabion launching apron installation along the toe shall be executed section by section to ensure slope and scour protection before monsoon season exposure.

1.8.3.2 Construction of Flood Protection Bund along Road Main Drain (RD 00 to RD 5573)

Excavation, filling, embankment development, and preparation of bund alignment for construction of flood protection structures along the Road Main Drain from RD 00 to RD 5573 to improve flood conveyance and protection of surrounding settlements and agricultural land. Execution of layer-wise filling and compaction works including moisture control and field density testing shall ensure embankment stability and resistance against erosion and flood loading.

1.8.3.3 Construction of Eight Culverts on Jhat Pat Main and Temple Drains

Earthwork excavation for foundations, preparation of subgrade, removal of unsuitable material, development of approaches, and construction of reinforced cement concrete works including foundations, abutments, deck slabs, wing walls, approach transitions, reinforcement fixing, formwork, concrete placement, and curing for safe traffic movement and hydraulic continuity across the eight culvert locations on Jhat Pat Main and Temple Drains.

1.8.3.4 Construction of Five Aqueducts on Jhat Pat Main and Temple Drains

Excavation and preparation of foundations and structural bases for construction of five aqueduct components, including associated earthworks and site grading, followed by construction of reinforced concrete elements including foundations, walls, slabs, transitions, water conveyance sections, wing walls, and protection works to ensure reliable hydraulic performance across the Jhat Pat Main and Temple Drain crossings.

1.8.4 Environmental and Social Management Plan (ESMP) Implementation

ESMP implementation shall be a **continuous activity throughout the entire 24-month project duration**. Activities include dust suppression, waste management and disposal, environmental and safety trainings, mitigation of noise and air quality impacts, community consultations, implementation of the Grievance Redress Mechanism (GRM), OHS compliance inspections, drainage and access management, and monthly ESMP monitoring and reporting to ensure adherence with environmental and social safeguard requirements in accordance with the World Bank ESF and ESCP.

1.8.5 Environmental Monitoring and Reporting

Environmental monitoring and reporting activities shall continue throughout the 24-month implementation period to ensure compliance with environmental safeguard requirements and approved ESMP provisions. The tentative workplan activity schedule for implementation of ESMP measures is provided at Annexure-Y.

1.8.6 Restoration of Flood Protection Bund for Gandava Town Left and Right Side, District Jhal Magsi

1.8.6.1 Earthworks (Excavation, Filling and Compaction)

Earthwork activities include excavation, embankment formation, filling, moisture conditioning, layer-wise compaction, shaping, and trimming of embankment sections in accordance with approved design specifications to achieve the required density, stability, and flood protection performance.

1.8.6.2 Slope Protection (Stone Pitching Works)

Stone pitching works shall be executed on embankment slopes including placement of filter layers and protection materials to minimize erosion, improve slope stability, and protect flood protection structures against hydraulic action and scouring during high-flow events.

1.8.6.3 Gabion Works for Apron Protection

Gabion apron works shall be provided at vulnerable locations and embankment toes for energy dissipation, scour control, erosion protection, and strengthening of flood protection structures to enhance resilience against future flood events.

1.8.7 Environmental and Social Management Plan (ESMP)

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, and community consultations and operation of the Grievance Redress Mechanism (GRM).

1.8.8 Project Deliverables and Reporting

Project deliverables and reporting activities shall continue throughout the implementation period. These include submission of shop drawings, ESMP implementation plans, monthly progress reports, environmental monitoring reports, and the final project completion report upon completion of works.

1.8.8.1 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 and approved ESMP provisions.

1.8.9 Shop Drawings and Quality Assurance Documentation

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

1.8.10 Progress Reporting and Project Coordination

Progress reporting, coordination meetings, construction supervision, and project management activities will continue throughout the entire implementation period of 24 months to ensure timely execution and effective monitoring of project activities.

1.8.11 Project Completion and Demobilization

Final inspection, testing, preparation of as-built drawings, submission of completion reports, 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	Project Coordinator-CAMEOS consultant
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 Specialists
	Mr. Shakoor Kakar	Socio Economic baseline and Consultations
7	Ms. Sidra	Gender Specialist
8	Mr. Zarak Khan	Environment field staff (Baseline Data collection)
9	Waqar Ahmed	Surveyor
10	Mr. Safdar Chana	Environmental Baseline Monitoring's

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), National Environmental Quality Standards (NEQS), 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
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	Relevant: 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 ¹⁷ . The ESMF and the related site-specific E&S instruments will be implemented throughout the project to comply with ESS1.	• Balochistan Environmental Protection Act, 2012 • Guidelines for Environmental Assessment, Pakistan EPA • Review of IEE and EIA Regulations, 2020	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&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. ESS-1 specifically mentions disadvantaged or vulnerable groups, the Act does not touch upon this theme directly.	E&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&S tools (e.g, RPF, LMP and SEP) have taken into consideration the marginalized and vulnerable groups.

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
ESS2 – Labor and Working Conditions	Relevant: 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.	• Balochistan Occupational Safety and Health Act, 2022 • Employment of Child Act 1991 • Balochistan Employment of Children (Prohibition & Regulation) Act, 2021 • The Balochistan Bonded Labour System (Abolition) Act, 2021 • Factories Act 1934 • Balochistan Factories Act, 2021 • Workmen Compensation Act 1923 and Rules 1961. • Balochistan Payment of Wages Act, 2021 • The Balochistan Minimum Wages Act, 2021 • The Balochistan Shops and Establishment (Amendment) Act, 2022 • The Balochistan Employees' Social Security Act, 2022 • Road Transport Workers Ordinance, 1961 • The Balochistan Industrial Relations Act, 2022	National and Provincial laws regarding labour rights address most of the requirements of the ESS2. 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. 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.	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). All of this has been done in accordance with the provincial and national laws and ESS-2 requirements.

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
ESS3 – Resource Efficiency and Pollution Prevention and Management	Relevant: 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.	• National Energy Efficiency and Conservation Act, 2015 • Balochistan Environmental Protection Act, 2012 • Pakistan Climate Change Act, 2017 • National Environmental Policy, 2005	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.
ESS4 – Community Health and Safety	Relevant: The project may cause community health and safety risks during civil works which include exposure to physical hazards, the traffic and road safety hazards, potential of GBV/SEA/SH risks from presence of project workers, spread of different transmittable communicable diseases, exploitation of economically disadvantaged or otherwise	• Balochistan Occupational Safety and Health Act, 2022 • Pakistan Penal Code, 1860 • National Disaster Management Act, 2010 • Balochistan Environmental Protection Act, 2012	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
	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.			
ESS5 – Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant: 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 and mitigation measures.	- Land Acquisition Act 1894 - The Land Acquisition (Amendment) Act, 2009	Screening is limited to physical survey of land, there is no consideration of social risks in the LAA No formal stakeholder consultations required by the LAA, or in host communities in case of resettlement 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 and loss of livelihood in the LAA Land assets and structures are valued at market value in the LAA, instead of replacement cost in the ESS No compensation for non-titleholders in the LAA, while ESS5 requires all parties affected by land acquisition to be compensated.	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
ESS6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant: 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.	- National Forest Policy, 2015 - The Forest Act, 1927 - Balochistan Wildlife preservation protection conservation and management Act 2014 (BWPPCMA) - The Balochistan Forest Act 2022	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: Community Infrastructure Rehabilitation 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.
ESS7 – Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not relevant: 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.
ESS8 – Cultural Heritage	Relevant: Since project investments include significant amount of civil works which includes	- Antiquities Act, 1975 - The Antiquities Act, 1975 (amended in 1990)	The provincial legislation is silent regarding the Development of Physical Cultural Resource	This ESMF however, has developed "Chance Find Procedure" to be followed

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
	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.	Balochistan Antiquity Act, 2014	Management Plan. There is no provision related to tangible and intangible cultural properties. 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.	during project implementation in case of any chance find physical culture resource.
ESS9 - Financial Intermediaries	Not relevant: This standard is not relevant, as Financial Intermediaries will not be used.	NA	NA	NA
ESS10 - Stakeholder Engagement and Disclosure	Relevant: Effective stakeholder engagement and 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.	- Review of IEE and EIA Regulations, 2000 - Balochistan Environmental Protection Act, 2012 - Guideline for Public Consultation, 1997	Stakeholder engagement in public sector development projects is not 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.	The SEP and GRM have been developed as a part 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 Sub-project 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

3. DESCRIPTION OF THE SUBPROJECT

This chapter describes the salient features of the Gandava Town Flood Protection Bund sub-project under the Irrigation/Flood Protection component of IFRAP. The sub-project involves restoration/rehabilitation of the left and right-side flood protection bunds of Gandava Town under Package-VI in District Jhal Magsi.

3.1 Location of Sub-project

Restoration of the Gandava Town FPB is located in District Jhal Magsi. The location map of the Gandava Town FPB is shown in Figure 3-1.

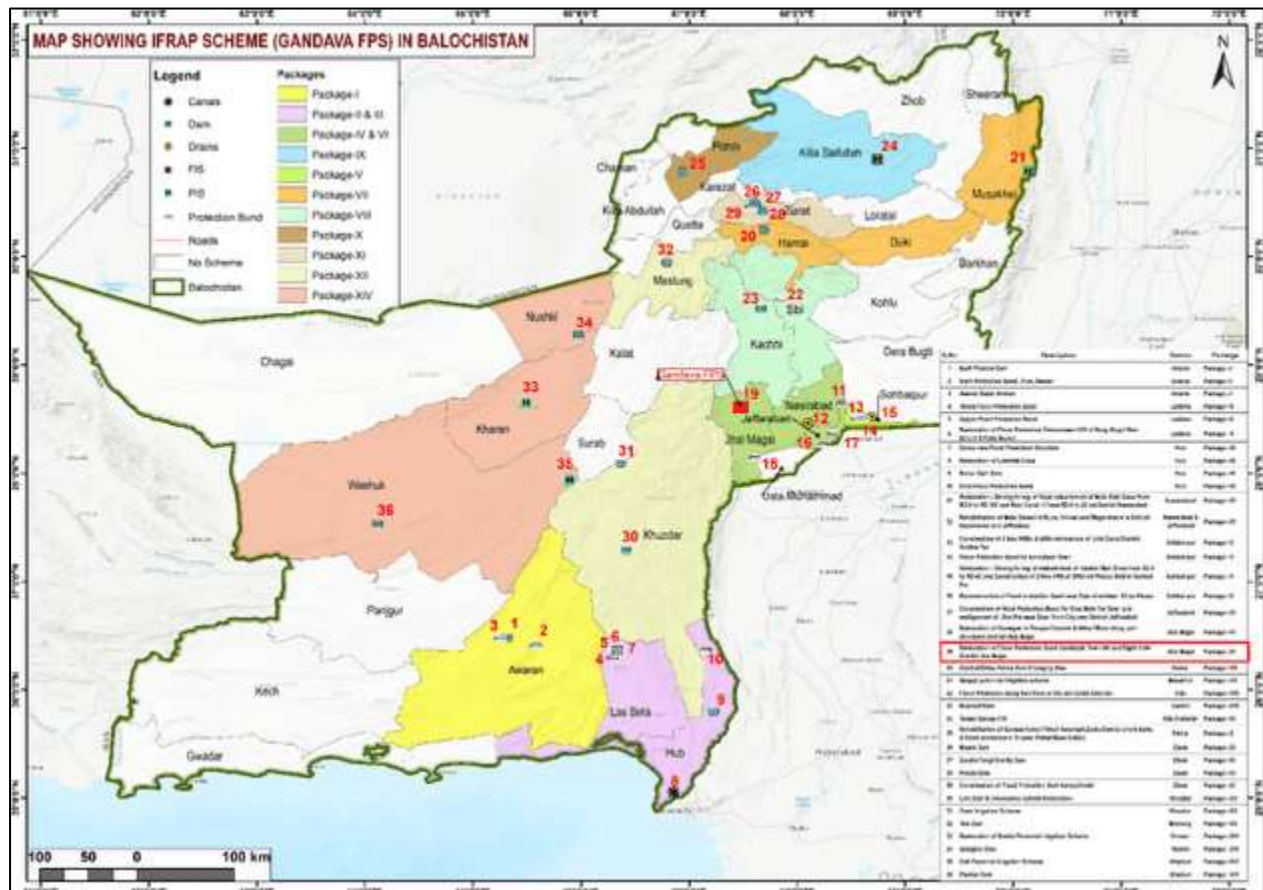


Figure-3-1: Location Map of Flood Protection Bund Gandava Town

3.1.1 Flood Protection Embankment at Gandava (FPB)

The Gandava Flood Protection Bund (FPB) site is located within the Kachhi Plain, a structurally controlled alluvial basin characterized by extensive fluvial deposits derived from the surrounding upland ranges. The subsurface conditions are predominantly composed of unconsolidated sediments including clay, silt, sand, and gravel, deposited under the influence of seasonal hill torrents and flood flows. The geological setting indicates minimal rock exposure, with the basin morphology governed by depositional processes and regional compressional tectonics associated with adjacent fold belts.

3.2 DESIGN CRITERIA

Table 3-1: Design Parameters of Flood Protection Bund Gandava Town

Sr. No.	Parameters	Findings
1	Catchment area (Sq. Km)	8136
2	Longest stream length (m)	220
3	Slope	0.0103
4	Crest width (m)	6.0
5	River side slope	2:1
6	Land side slope	2:1

Sr. No.	Parameters	Findings
7	Gabion Protection slope thickness (m)	0.75
8	Geotextile below Gabion (microns)	40
9	Scour depth	3.20
10	Silt factor	4.75

For the Subproject, the following design criteria shall be applied.

Codes and Practices (Design):

- USACE EM 1110-2-1913 Design and Construction of Levees
- USACE EM 1110-2-2300 General Design and construction considerations for Earth & Rock-Fill Dams
- USACE EM 1110-2-1911 Construction Control for Earth and Rock-Fill Dams
- USACE EM 1110-2-1901 Seepage Analysis and Control for Dams
- USACE EM 1110-2-1902 Slope Stability
- USBR Design Standard No. 13, Chapter 2 & 4 Embankment Dams: Design and Material Selection
- FEMA Technical Manual – Filters for Embankment Dams (2011) Best Practices for Filter Design and Construction
- Pakistan Building Code (2021) Seismic

Standards (Material Testing Codes):

- Sieve Analysis D422
- Atterberg Limits D4318
- Moisture-Density (Proctor) D698
- Field Density (Compaction) D6938
- Permeability D2434/D5084
- Stone Specific Gravity & Absorption C127/C128
- Stone Abrasion C131

3.3 Geology

Geologically, the project area, which includes the site of Gandava Flood Protection Bund (FPB), lies within the Kachhi Plain tectonic zone. This plain is a broad alluvial basin in eastern Balochistan, representing a foreland basin developed due to regional compressional tectonics. The Kachhi Plain is bounded by the Kirthar Fold Belt towards the east and the Central Brahui Range towards the west.

The regional geology reflects a complex tectonic setting shaped by the interaction of the Indian Plate and Eurasian Plate, leading to the development of fold-and-thrust belts, sedimentary basins, and alluvial plains. To the east of the project area, the Kirthar Fold Belt is characterized by folded sedimentary rock sequences, while the Central Brahui Range to the west consists of deformed and uplifted formations. Furthermore, the Chaman Fault system, located to the northwest of the project area, is a major tectonic boundary accommodating significant crustal displacement and seismic activity.

Overall, the project area falls in a geologically active region influenced by foreland basin development, fluvial deposition, and tectonic deformation, making it an integral part of the tectonic framework of eastern Balochistan.



Figure-3-2: Alluvial/riverbed deposits along the washed-out channel.



Figure-3-3: Alluvial deposits (Clayey Silt, Silty Clay and Gravelly Silt) along the sub-project site.



Figure 3-4: Surface geological map of the proposed FP Embankment of Gandava Town.

3.4 RAW MATERIAL SOURCE AND AVAILABILITY

Sources of different raw materials required for restoration of the Gandava Town Flood Protection Bund are given in Table 3-2 below.

Table 3-2: Availability of construction material

Sr. No.	Raw material	Availability in the surrounding	Material selection Criteria
1	Borrow material	The contractor will identify the site and get that approved by CSC.	Material quality: Suitable soil with good compaction characteristics, appropriate gradation, and required plasticity; free from organic matter and deleterious substances. E&S requirements: Avoid agricultural land, settlements, wetlands, and environmentally sensitive areas; ensure protection of groundwater resources. Legal & safety requirements: Extraction only from approved borrow areas with CSC approval; comply with ESMP; obtain landowner consent where applicable; ensure safe access and low risk of flooding. Location: Preference to nearby sources to minimize haulage distance, cost, and environmental impacts. Rehabilitation: Borrow areas shall be

Sr. No.	Raw material	Availability in the surrounding	Material selection Criteria
			restored after use in accordance with ESMP provisions.
2	Stones for retaining walls and stone pitching.	The contractor will identify the most viable site for stones and CSC will approve accordingly.	Material quality: Hard, dense, and durable rock with high resistance to weathering and erosion; free from cracks, laminations, and weak planes. Size: Typically 150–300 mm for retaining walls and 300–1000 mm for stone pitching, depending on design requirements. Strength: High compressive strength and abrasion resistance. Absorption: Preferably less than 2–3%. Environmental requirements: Sourced from approved quarry sites with minimal environmental disturbance and proper site management. Forbidden materials: Soft, weathered, or rounded stones.
3	Water for compaction and sprinkling.	Availability of water for construction activities will be a problem at the Subproject area. However, the CC will fix it with the approval of CSC.	Quality: Clean and free from harmful substances such as oils, acids, salts, and contaminants. pH: Within acceptable range (approximately 6–8). Salinity: Low total dissolved solids; suitable for construction use. Other properties: Clear to slightly turbid; minimal suspended solids and organic matter. Source: Approved water source ensuring no adverse impact on local communities and water resources.

3.4.1 Borrow Area

The project requires borrow material (embankment fill / clay) and aggregates for construction of the Gandava Town Flood Protection Bund. Clay borrow material is to be sourced from PIU/CSC-approved borrow areas near the FPB alignment, including identified alluvial sources (Source S-1 near the FPB alignment and others). Gravels and aggregates for apron and pitching works are sourced from Bareja (approximately 45 km) and Peer Chatta (approximately 25 km). Stone for pitching and gabion works is sourced from approved quarry sites as per Table 3-2. The Borrow Area Map for Package-VI is provided as Figure 3-5 in this ESMP. All borrow areas shall be verified through material testing before use, operated only with landowner consent or authority permission, and rehabilitated after completion as per ESMP ECoPs (Annexure D). Borrow area operations are subject to CSC approval prior to commencement.

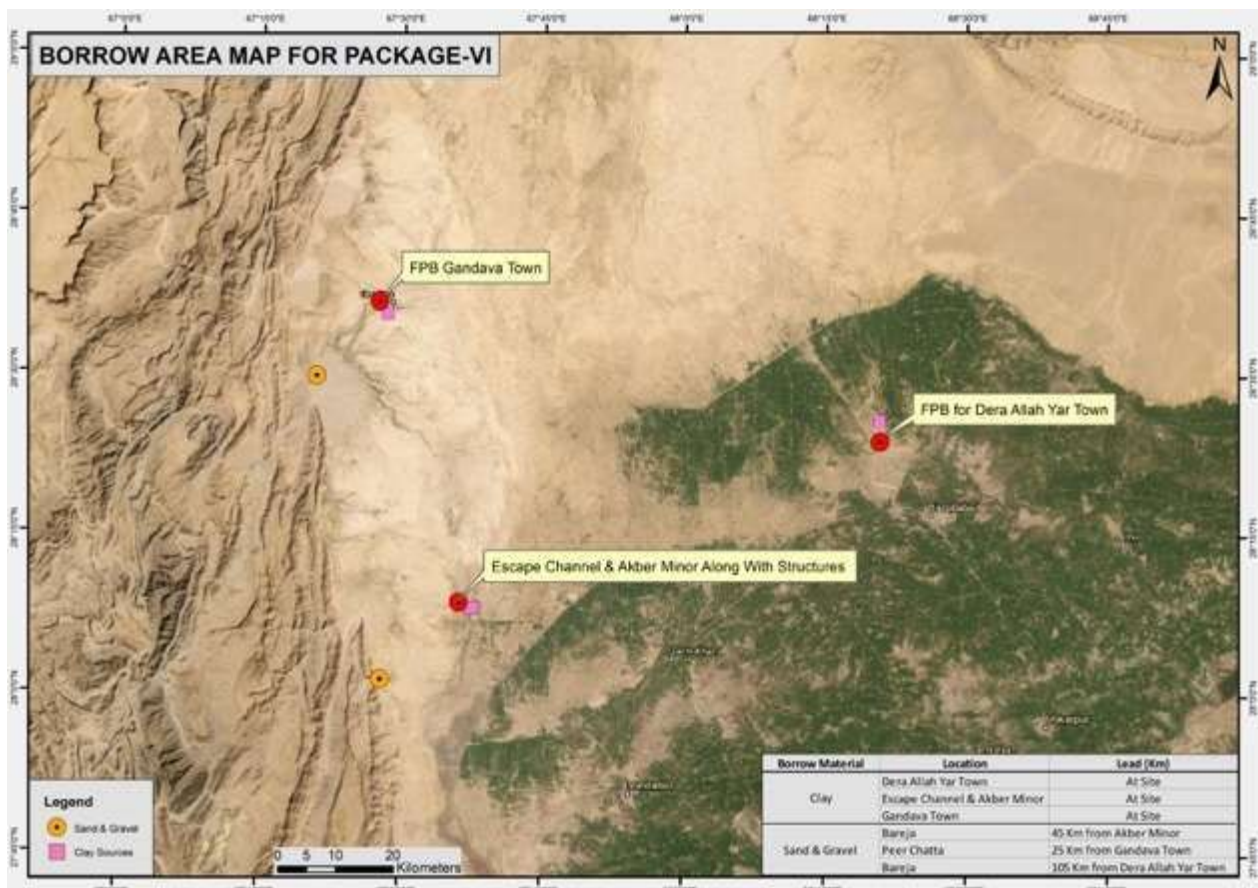


Figure-3-5: Borrow Area & Material map of Package VI.

3.5 CONTRACTOR'S CAMP

The criteria for contractor's camp site will be 500 m away from any residential dwelling and sensitive receptors. Since the Sub-project 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 Construction Contractor will be contractually bound to maximize employment of local people from Gandava Town and nearby villages, where skills are available. Machinery, equipment and materials shall be accommodated only in PIU/CSC-approved yards or rented premises near Gandava Town/approved haul routes with adequate storage, drainage, spill containment, safe access and separation from settlements and sensitive receptors.

3.5.1 Standards for the Construction of Workers Accommodation

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

Activity	Guidelines
Provision of Camp Facilities	Provide; • Lined washing areas • In-house common entertainment facilities. • Septic tanks and soaking pits; Solid waste management. • Fire prevention and firefighting equipment • Separate from living quarters, sheltered kitchen area. • Safe drinking water supply which meets the national standards • 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. • Appropriate protection against heat, cold, damp noise, fire, and disease-carrying animals, in particular insects. • Lighting and electricity supply • Ventilation facility with availability of electricity, fans • Roads and paths • 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. • 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. • Treatment facilities for sewerage of toilet and domestic wastes • Pave the internal roads with at least haring-bond bricks to suppress dust and to work against possible muddy surfaces during monsoon.
Cooking	• Provide a sheltered and ventilated kitchen area that is separated from living quarters • Provide fuel to the construction camps for their daily purpose use, to discourage them to use fuelwood or biomass. • Make available alternative fuels like natural gas or kerosene to the workforce to prevent them from using biomass for cooking.
Health and Hygiene	• Provide adequate drainage facilities throughout the camps to ensure that disease vectors' habitats (stagnant water bodies, puddles) do not form. • Place display boards at strategic locations within the camps containing messages on the best hygienic • Provide initial health screening of the laborers coming from outside areas. • Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work. • Provide adequate health care facilities within campsites. • Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint a paramedic on site. • Provide a transport facility for the laborers during an emergency to be transported to the nearest hospitals • Provide GBV, SH, SEA and HIV awareness programming, including STI (sexually transmitted infections) and HIV information, education, and communication for all workers.

Activity	Guidelines
Safety	• Availability of fire extinguishers inside the camps • Provide the appropriate type of fire-fighting equipment suitable for the construction camps • Display emergency contact numbers clearly and prominently in strategic places in camps. • 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 • Communicate the roles and responsibilities of laborers in case of an emergency in the monthly meetings with contractors. • Provide appropriate security personnel (police /home guard or private security guards) and enclosures to prevent unauthorized entry into the camp area. • Evacuation plan and evacuation drills in labour camps
Drainage	• Regularly inspect and maintain drains • Provide a drainage system to transfer sewage effluent to the septic tank with a soakage pit of adequate capacity • Divert natural rainfall-runoff around the site location • Provide adequate storm-water drainage capacity to prevent the accumulation of stagnant water following heavy rains • Build new shallow v drainage lines as required for wastewater/rainwater run off to the nearby recipient water body • 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.
Site Restoration	• Backfill waste and sewage pits • Consider seeding the area to provide an initial protective canopy • Give prior notice to the laborers before demolishing their camps/units • Maintain the noise levels within the national standards during demolition activities • Reuse the camp material to the maximum extent. Dispose of remaining debris at the designated waste disposal site. • To restore the site to its original condition or an agreed condition with the landowner defined before the commencement of the works (in writing). • Dismantle and remove from the site all facilities established within the construction camp, including the perimeter fence and lockable gates after the construction work. • Decommission and fill drinking water wells (unless otherwise arranged with the landowner) • If possible, dismantle camps in phases as the work decreases (do not wait for the completion of the entire work)

3.6 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.

3.7 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, 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 areas of district Jhal Magsi. This will also keep the camps less pressurized and manageable.

3.7.1 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 3-3: Impact Characterization-Site Security

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

3.7.1.1 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:

3.7.1.2 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.

3.7.1.3 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.

3.7.1.4 Residual Impact

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

3.8 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.

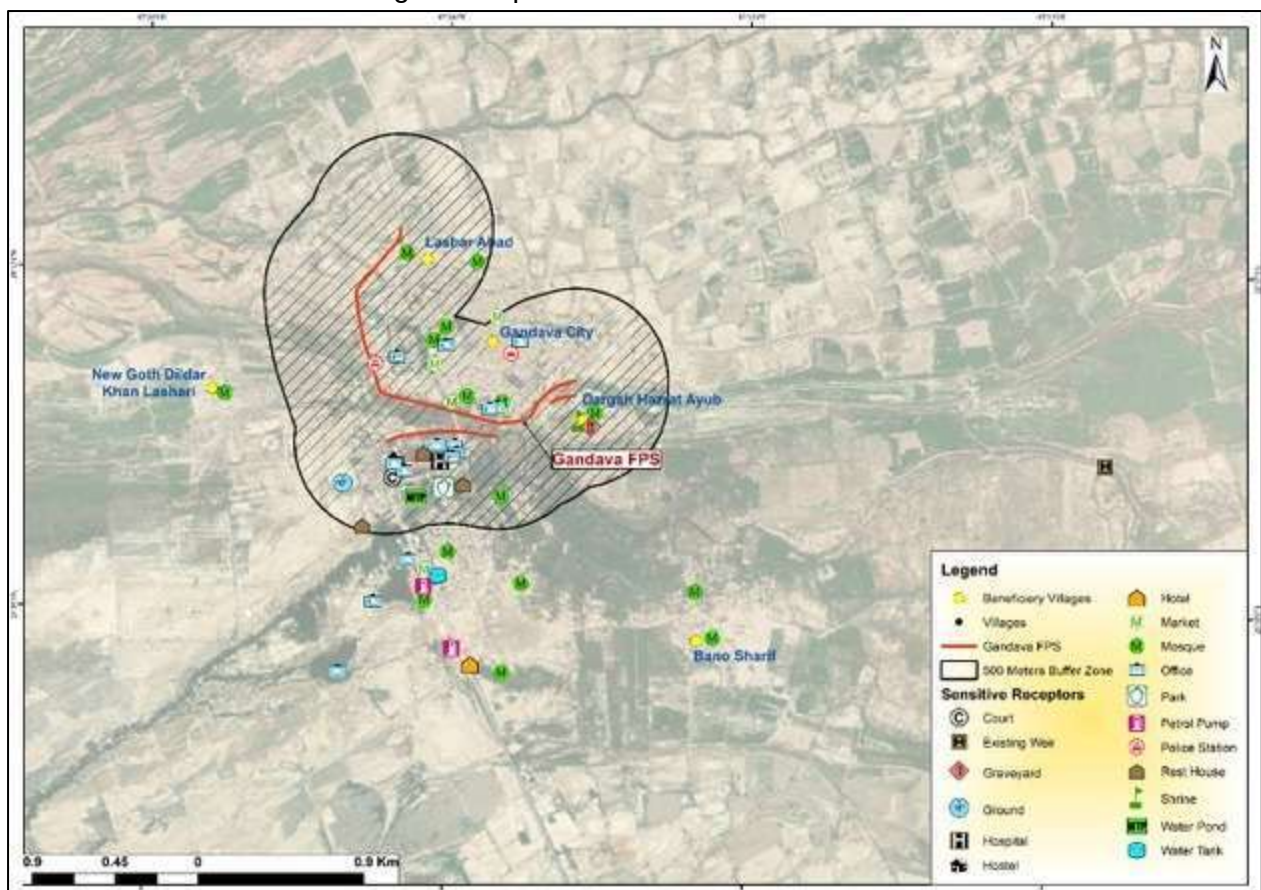


Figure-4-1: Map showing Buffer Zone along with receptors

4.2 PHYSICAL ENVIRONMENT

4.2.1 Geography and Climate

The Sub-project area lies in District Jhal Magsi of Balochistan. The district is bordered by Bolan district on the north, by Jaffarabad and Nasirabad districts on the east, by Larkana district of Sindh province on the south, and by Khuzdar district on the west. The climate of the district is extremely

hot and dry in the summer. The summer season starts from April and lasts till October. June is the hottest month, with mean maximum and minimum temperatures of about 44 °C and 29 °C respectively. From November to the middle of March, the climatic conditions are pleasant. January is the coldest month and the mean maximum and minimum temperatures during this month are 23 °C and 8 °C. Rainfall is scanty and varies from place to place. Average annual rainfall in the district is 110 mm.

Table 4-1: Temperature (°C) of district Jhal Magsi

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Average Rainfall	18	30	38	27	17	20	55	47	18	5	5	15
Maximum Temperature	23	26	32	36	41	43	43	41	39	36	31	25
Minimum Temperature	5	5	9	12	19	22	22	23	22	13	10	6
Average temperature	14	16	21	27	32	34	35	33	31	26	22	17

Source: ERA 5 – Land data

Table 4-2: Rainfall (mm) and temperature (°C) of district Jhal Magsi.

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Average Rainfall	13.59	21.11	20.93	8.55	5.60	9.42	24.86	27.33	11.82	1.96	2.07	12.39
Maximum Temperature	14	16	21	27	31	33	35	33	31	26	21	17
Minimum Temperature	2	2	6	12	15	19	20	18	15	9	3	2
Average temperature	7	9	14	19	23	26	27	26	23	17	12	8

Source: ERA 5 – Land data

4.2.2 Land and Water Resources

District Jhal Magsi lies on a flat alluvial plain. The main land use statistics of the district as per Balochistan Development Statistics 2018-19 shows that total area is 361,500 HA, out of which 131,049 HA is total cultivated area. The district falls under the Tropical Agro-Ecological Zone and Western Dry Mountain Agro-Ecological Zone of Pakistan. The crops include wheat, barley, rapeseed & mustard, canola, sunflower, jowar, sesanum, moong, maash, moath, guar seed, cotton, tobacco, and sugarcane. Fruits include mangoes, citrus, guavas, dates, watermelon, ber, and mulberry. Onion, tomatoes, okra, tinda, spinach, cabbage, carrots, bitter gourd, bottle gourd, pumpkin, cauliflower, brinjal, and coriander are the vegetable produce of the district.

The major sources of irrigation in the district are canals. Various streams like Sukleji, Pir Chattal, and the Sharkal Nala ultimately join and form one stream, the waters of which are then used for irrigation purposes. In addition, Mir Saifullah Magsi Canal irrigates the lands of Kot Magsi. Moola Channel, Escape, Pat Magsi, Laibo, Miskan, Zareenabad, Baighari, Jodha, Dhoori, Malwani, Karam Khan Khosa, Missri Khosa, Sippy, Ahmedabad, Beera, Gharr, Abad Distry, Abad Channel, Badra Nalla, and Sindur Distry Channel of Sikandar also provide irrigation waters.

4.2.3 Land Use and Soil Erosion

Gandava Flood Protection Bund (FPB) command area lies in Jhal Magsi district. The agriculture data shows significant activity in cultivated areas; however, there is a constraint of irrigation water management and exposure to flood flows, which limits the productivity of adjoining lands.

The Gandava Flood Protection Bund (FPB) lies within the cultivated floodplain of seasonal drainage channels in District Jhal Magsi, Balochistan. The surrounding landscape is characterized by agricultural land interspersed with natural drains, flood channels, and patches of barren or fallow ground. The alignment of the bund, as observed in satellite imagery, passes through

productive farmland where crops are mainly cultivated through flood-recession farming and supplemental irrigation from shallow tube wells and dug wells.

The soil in the project area consists predominantly of recent alluvial deposits, including sandy silt, silty clay, and fine sand derived from fluvial sedimentation. These soils are fertile and moderately cohesive; however, due to their loose structure and sparse vegetation cover, they are highly susceptible to erosion during flood events. Floodwater frequently causes bank cutting, sheet erosion, and sediment deposition, resulting in the loss of cultivable land and damage to standing crops.

Construction of the Gandava Flood Protection Bund (FPB) will protect productive agricultural land and adjoining rural infrastructure from recurring flood damage. The embankment will confine flood flows within a defined channel, reducing soil erosion and the lateral spread of inundation across farmland. The design includes stone pitching on the river side slope and gabion launching aprons at the toe, which will provide effective protection against scouring and hydraulic erosion.

4.2.4 Climate Risks and Vulnerabilities in the Project Area

The project area of Gandava Town, District Jhal Magsi, is situated within the Kachhi plain: one of the most climate-exposed floodplain settings in Balochistan: characterized by increasing frequency and intensity of extreme precipitation events that generate rapid-onset flash floods and substantially elevated surface runoff volumes. These hydrometeorological hazards are compounded by the low protective capacity of the existing flood protection bund, whose damaged and degraded state renders the area acutely vulnerable to recurrent climate-induced inundation threatening Gandava Main City, Syed Farooq, Siddiq Muhallah, and Darga Town.

Projected changes in regional rainfall patterns under climate change scenarios indicate a heightened probability of high-intensity, short-duration storm events contributing to peak discharge levels that may exceed the design parameters of existing flood protection structures. Hill torrent flows from the surrounding catchment: spanning approximately 8,136 km² with a longest stream length of 220 m and a catchment slope of 0.0103 m/m: generate rapidly concentrating flood flows that amplify the hydrological load on the Gandava FPB alignment and its toe protection works beyond what historical average conditions would suggest.

Recurrent flood exposure accelerates the structural deterioration of the flood protection bund through active degradation mechanisms including embankment overtopping, internal erosion and piping, crest and slope failure, toe scour and undermining, gabion apron displacement, and progressive breaching: as evidenced by the structural damage caused by the 2022 monsoon floods that directly necessitated this subproject. These mechanisms collectively reduce the bund's hydraulic capacity, increase the frequency and cost of corrective interventions, and shorten the operational lifespan of rehabilitated embankment assets.

The convergence of these physical climate risks: intensified storm events from a large and hydrologically active catchment, increased peak runoff, and accelerated structural wear of earthen embankment and toe protection: underscores the imperative to apply climate-resilient design standards (100-year design flood, SSP2-4.5 scenario) and to institutionalize systematic operation and maintenance protocols within the long-term management framework of the Gandava FPB.

4.2.5 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 0.24 to 0.33g for scheme no. 01 and 0.20 to 0.24g for both scheme no. 02 and 03.

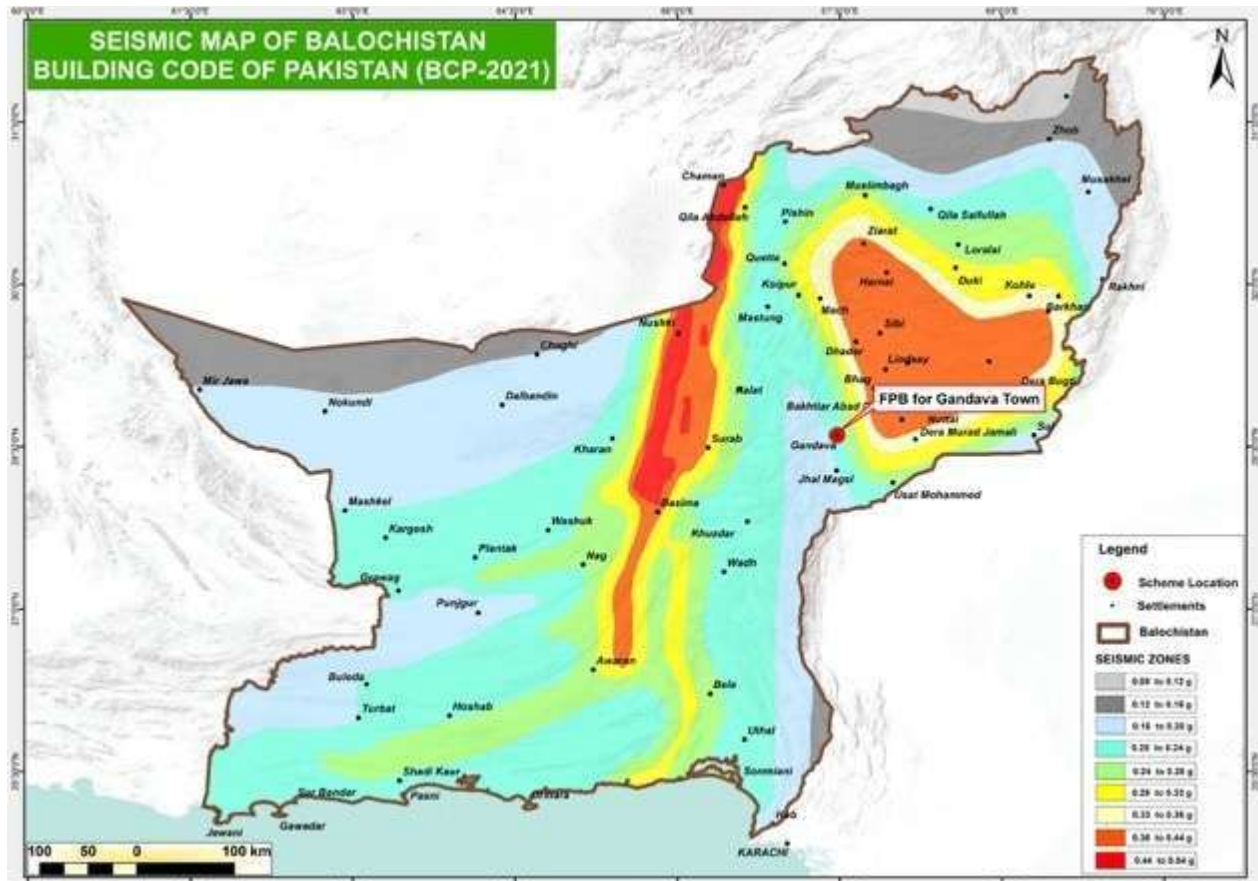


Figure-4-2: Seismic map of Balochistan showing the location of the sub-project area.

4.2.6 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 4-3: Characteristics of catchment area

Scheme Name	Catchment Area Km ²	Length of Longest Stream (m)	Slope (m/m)
Restoration of Flood Protection Bund Gandava Town left and Right-Side District Jhal Magsi	8136	220	0.0103



Figure-4-3: Catchment area map of FPB Gandava Town

4.2.7 Ambient Air Quality

The ambient air quality pollutant testing was carried at the location of Flood Protection Bund Gandava Town. Overall air quality is fair. The pollutants monitored are particulate matter (PM₁₀), nitrogen oxides (NO), fine particles, Sulphur dioxide (SO₂), 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 4-4: Air Quality Analysis

Parameters	Temp.	NO ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	SPM ($\mu\text{g}/\text{m}^3$)	O ₃ (mg/m^3)
NEQS & BEQS Limit	-	24 hrs (40 $\mu\text{g}/\text{m}^3$)	24 hrs (80 $\mu\text{g}/\text{m}^3$)	24 hrs (120 $\mu\text{g}/\text{m}^3$)	08 hrs (40 $\mu\text{g}/\text{m}^3$)	24 hrs (5 mg/m^3)	24 hrs (150 $\mu\text{g}/\text{m}^3$)	24 hrs (500 $\mu\text{g}/\text{m}^3$)	01 hrs (130 $\mu\text{g}/\text{m}^3$)
WHO Limit	-	-	24 hrs (25 $\mu\text{g}/\text{m}^3$)	24 hrs (40 $\mu\text{g}/\text{m}^3$)	08 hrs (08 $\mu\text{g}/\text{m}^3$)	24 hrs (15 mg/m^3)	24 hrs (45 $\mu\text{g}/\text{m}^3$)	-	Peak season (60 $\mu\text{g}/\text{m}^3$)
Time	Results								
10:00 AM	33	19.2	33.5	5.27	0.062	25.4	88.2	113.6	5
11:00 AM	33	16.8	36.3	4.02	0.037	23.9	93.5	117.4	-
12:00 PM	35	17.9	36.5	4.21	0.046	24.7	104.7	129.4	-
01:00 PM	35	19.8	38.8	6.55	0.037	28.1	99.4	127.5	-
02:00 PM	35	16.7	36.4	5.5	0.037	25.6	86.6	112.2	-
03:00 PM	36	18.1	39.7	5.17	0.034	27.4	113	140.4	-
04:00 PM	36	15.9	37.5	6.3	0.044	29.3	132.3	161.6	-
05:00 PM	34	18.4	37.8	4.98	0.044	26.6	105.5	132.1	-

Parameters	Temp.	NO ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	SPM ($\mu\text{g}/\text{m}^3$)	O ₃ (mg/m^3)
06:00 PM	34	15.2	32.6	4.36	0.022	25.4	103.6	129	-
07:00 PM	34	12.7	26.7	6.67	0.046	25.7	85.4	111.1	-
08:00 PM	33	11.8	28.5	5.05	0.046	27.6	87.9	115.5	-
09:00 PM	32	11.3	28.6	6.21	0.047	29.4	88.4	117.8	-
10:00 PM	31	12.5	39.5	4.15	0.034	27.8	91	118.8	-
11:00 PM	30	10.3	28	5.97	0.034	28.4	79.1	107.5	-
12:00 PM	29	9.2	25.6	4.9	0.035	28.8	78.3	107.1	-
01:00 AM	29	10.7	27.3	4.28	0.022	25.9	54	79.9	-
02:00 AM	28	9.5	30.7	3.95	0.022	26.3	81.2	107.5	-
03:00 AM	27	7.9	24.5	4.81	0.047	29.6	68.9	98.5	-
04:00 AM	28	6.7	27.4	6.35	0.047	28.2	66.5	94.7	-
05:00 AM	26	8.5	25.9	6.54	0.047	29.3	77.5	106.8	-
06:00 AM	27	9.1	26.7	6.27	0.035	24.4	34.4	58.8	-
07:00 AM	28	11.6	30	5.4	0.035	26.6	65.1	91.7	-
08:00 AM	29	12.9	24.8	4.05	0.035	25.7	68.9	94.6	-
09:00 AM	30	12.4	27.7	5.82	0.041	27.5	71	98.5	-
AVERAGE	30.7	13	30.99	5.2	0.041	26.77	84.88	112.64	5

Table 4-5: 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.)	13	WL
2	Oxide Of Nitrogen as (NO ₂)	$\mu\text{g}/\text{m}^3$	25 (24 hrs.)	80 (24 hrs.)	30.99	WL
3	Sulphur Dioxide (SO ₂)	$\mu\text{g}/\text{m}^3$	40 (24 hrs.)	120 (24 hrs.)	5.2	WL
4	Carbon Monoxide (CO)	mg/m^3	4 (24 hrs.)	5 (08 hrs.)	0.0411	WL
5	Particulate Matter (PM _{2.5})	$\mu\text{g}/\text{m}^3$	15 (24 hrs.)	35 (24 hrs.)	26.77	WL
6	Particulate Matter (PM ₁₀)	$\mu\text{g}/\text{m}^3$	45 (24 hrs.)	150 (24 hrs.)	84.88	WL
7	SPM	$\mu\text{g}/\text{m}^3$	-	500 (24 hrs.)	112.64	WL
8	Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	60 (Peak Season)	130 (01 hr.)	5	WL

4.2.8 Water Quality

Environmental sampling for surface and ground water was carried out along the Sub-project locations. The samples were analyzed by following the standard protocols. However, the certain parameters results are found above the permissible limits of NEQs for ground water. A summary of laboratory and analytical test results are tabulated in Table 4.6 and 4.7.

a) Surface Water Quality

Table 4-6: Surface water quality at Flood Protection Bund Gandava Town

Sr	Parameters	Units	Testing Method	NEQS Limits	WHO Limits	BEQS Limits	Result	Remarks
1	Turbidity	NTU	HACH Turbidity meter	<5	<15	<15	<0.07	OL
2	Taste	Taste	Sensory Evolution	Obj/Non Obj	Obj/Non Obj	Obj/Non Obj	Non-obj	OL
3	Odour	Odor	Sensory Evolution	Obj/Non Obj	Obj/Non Obj	Obj/Non Obj	Non-obj	WL
4	Colour	TCU	Pt-Co method	≤15 TCU	≤15 TCU	≤15 TCU	<3.1	WL
5	Phenolic Compounds	As Phenol (mg/L)	ASTM D-1783	-	-	-	ND	WL

Sr	Parameters	Units	Testing Method	NEQS Limits	WHO Limits	BEQS Limits	Result	Remarks
6	Residual chlorine	Cl ₂ (mg/L)	HACH Method 8167	0.2-0.5	-	0.2-0.5	-	OL
7	pH @ 25 °C	PH	ASTM D-1293	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	7.91	WL
8	Total Dissolved Solid	TDS (mg/L)	APHA 2540-C	<1000	<1000	<1000	-	OL
9	Total Hardness	As	APHA 2340-C	<500	-	<500	88.1	WL
10	Fluoride	F ⁻¹ (mg/L)	APHA 4500-F ⁻¹	≤1.5	1.5	≤1.5	-	OL
11	Chloride	Cl ⁻¹ (mg/L)	APHA 4500-Cl ⁻¹	<250	250	<250	-	OL
12	Cyanide	CN ⁻¹ (mg/L)	HACH Method 8027	≤0.05	0.07	≤0.05	ND	WL
13	Nitrate	NO ₃ ⁻¹ (mg/L)	HACH Method 8192	≤50	50	≤50	0.24	WL
14	Nitrite	NO ₂ ⁻¹ (mg/L)	APHA 4500-NO ₂ ⁻¹ -B	≤3.0(P)	3	≤3.0(P)	0.09	WL
15	Antimony	Sb (mg/L)	ASTM D-3697	≤0.005	0.02	≤0.005	ND	WL
16	Aluminum	Al(mg/L)	ASTM D-857	≤0.2	0.2	≤0.2	0.11	WL
17	Arsenic	As (mg/L)	ASTM D-2972	≤0.05	0.01	≤0.05	ND	WL
18	Boron	B (mg/L)	ASTM D-3082	0.3	0.3	0.3	ND	WL
19	Barium	Ba(mg/L)	ASTM D-4382	0.7	0.7	0.7	0.01	WL
20	Chromium Total	Cr (mg/L)	ASTM D-1687	≤0.05	0.05	≤0.05	ND	WL
21	Copper	Cu (mg/L)	ASTM D-1688	2	2	2	<0.09	WL
22	Cadmium	Cd(mg/L)	ASTM D-3557	0.01	0.003	0.01	ND	WL
23	Lead	Pb(mg/L)	ASTM D-3559	≤0.05	0.01	≤0.05	ND	WL
24	Manganese	Mn(mg/L)	ASTM D-858	≤0.5	0.5	≤0.5	ND	WL
25	Mercury	Hg (mg/L)	ASTM D-3223	≤0.001	0.001	≤0.001	ND	WL
26	Nickel	Ni(mg/L)	ASTM D-3866	≤0.02	0.02	≤0.05	ND	WL
27	Selenium	Se(mg/L)	ASTM D-3858	0.01	0.01	0.01	0.08	WL
28	Zinc	Zn (mg/L)	ASTM D-1691	5	3	5	7.2	WL

*WL (Within Limits)

b) Ground Water Quality

Table 4-7: Ground water quality at Flood Protection Bund Gandava Town

Sr	Measuring Parameter	Units	Testing Method	NEQS Limits	WHO Limits	BEQS Limits	Results
1	Temperature at 40°C	°C	Calibrated Thermometer	40 ±3	40 ±3	40 ±3	30.3
2	pH at 25°C	pH	ASTM D-1293	6–9	6–9	6–9	7.51
3	Biological Oxygen Demand	BOD (mg/L)	APHA 5210	80	80	-	-
4	Chemical Oxygen Demand	COD (mg/L)	ASTM D-1252	150	150	150	145.9
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 ⁻ (mg/L)	ASTM D-512	1000	1000	1000	601
9	Phenolic Compound	Phenol (mg/L)	ASTM D-1783	0.3	0.3	0.3	ND
10	Fluoride	F ⁻ (mg/L)	APHA 4500-F	10	10	-	-
11	Anionic Detergent	Det (mg/L)	ASTM D-6173	20	20	20	5.26

Sr	Measuring Parameter	Units	Testing Method	NEQS Limits	WHO Limits	BEQS Limits	Results
12	Selenium	Se (mg/L)	APHA 4500-Se	0.5	0.5	0.5	ND
13	Sulfide	S (mg/L)	APHA 4500-S	1	1	1	0.74
14	Ammonia	NH ₃ (mg/L)	ASTM D-1426	40	40	40	19.1
15	Cadmium	Cd (mg/L)	ASTM D-3557	0.1	0.1	0.1	<0.52
16	Chromium Trivalent	Cr ³⁺ (mg/L)	APHA 3500-Cr	1	1	1	ND
17	Chromium Hexavalent	Cr ⁶⁺ (mg/L)	APHA 3500-Cr	1	1	1	0.05
18	Lead	Pb (mg/L)	ASTM D-3559	0.5	0.5	0.5	0.84
19	Mercury	Hg (mg/L)	Kit Method	0.01	0.01	0.01	ND
20	Nickel	Ni (mg/L)	HACH Dimethylglyoxime	1	1	1	ND
21	Silver	Ag (mg/L)	ASTM D-3866	1	1	1	ND
22	Zinc	Zn (mg/L)	HACH Zinc Method	5	5	5	0.87
23	Total Iron	Fe (mg/L)	APHA 3500-Fe	8	8	8	0.11
24	Manganese	Mn (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 ₄ (mg/L)	APHA 4500-SO ₄	600	600	600	309
27	Arsenic	As (mg/L)	Palintest Kit	1	1	1	ND
28	Copper	Cu (mg/L)	HACH Biquinoline	1	1	1	0.09
29	Chlorine	Cl ₂ (mg/L)	HACH DPD	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) Noise Record

Table 4-8: Noise Record at Flood Protection Bund Gandava Town

Measuring Parameter	Testing Instrument	Noise Test Report WHO Limit	NEQS & BEQS Limits	TIME	Results
Noise Level	Noise Meter	65 dB(A) (Day time)	75 dB(A) (Day time)	10:00 AM	37.47
				11:00 AM	35.03
				12:00 PM	35.54
				01:00 PM	39.8
				02:00 PM	39.19
				03:00 PM	40
				04:00 PM	37.16
				05:00 PM	38.07
				06:00 PM	37.77
				07:00 PM	34.93
				08:00 PM	38.38
				09:00 PM	38.18
				10:00 PM	31.49
				11:00 PM	28.85
				12:00 AM	29.56

Measuring Parameter	Testing Instrument	Noise Test Report WHO Limit	NEQS & BEQS Limits	TIME	Results
		55 dB(A) (Night time)	65 dB(A) (Night time)	01:00 AM	30.98
				02:00 AM	27.43
				03:00 AM	25
				04:00 AM	28.04
				05:00 AM	25.91
				06:00 AM	27.53
		65 dB(A) (Day time)	75 dB(A) (Day time)	07:00 AM	26.32
				08:00 AM	35.84
				09:00 AM	32.5
		Average Result			

4.3 ECOLOGICAL ENVIRONMENT

4.3.1 Environment and Biodiversity

Major tree species in District Jhal Magsi include Kandi (*Prosopis cineraria*), Lao (*Tamarix* spp.), and Pelo (*Salvadora oleoides*). In irrigated and settled areas, commonly planted species include Shisham (*Dalbergia sissoo*), Keekar (*Acacia arabica*), and Eucalyptus. Fruit-bearing trees cultivated in the district comprise date palm, mango, guava, citrus, and ber (*Ziziphus jujuba*). Riparian zones along canal banks and seasonal streams support vegetation such as *Mentha longifolia* and *Rumex obtusifolius*.

The main shrub and bush species include Karir (*Capparis aphylla*), Desert Teak (*Tecoma undulata*), and Milk Broom. Ground vegetation is largely represented by agricultural crops, including wheat, sorghum (jowar), barley, mustard, and rice.

Vegetation in the district can broadly be classified into the following zones:

- **Flood plains and cultivated areas:** These areas are intensively used for agriculture and support species such as Kandi (*Prosopis cineraria*), Keekar (*Acacia arabica*), Shisham (*Dalbergia sissoo*), Eucalyptus plantations, and fruit orchards including date palm, mango, guava, citrus, and ber. Major crops include wheat, sorghum, barley, mustard, and rice.
- **Foothills and dry plains:** These regions are characterized by sparse natural vegetation dominated by shrubs such as Karir (*Capparis aphylla*), Desert Teak (*Tecoma undulata*), and Milk Broom, along with grasses and other herbaceous species adapted to arid conditions.
- **Dry stream beds and canal banks:** *Tamarix* spp. (Lao) and riparian species such as *Mentha longifolia* and *Rumex obtusifolius* are commonly found along seasonal watercourses, drainage channels, and irrigation canals.

The district's fauna includes a variety of mammals such as the Asiatic Jackal, Desert Fox, Jungle Cat, Chinkara Gazelle, Cape Hare, and Indian Crested Porcupine. In the western mountainous fringes, Sindh Ibex and Urial are occasionally observed. Livestock commonly reared in the district includes Bhagnari cattle, sheep, goats, and camels.

Avifauna comprises species such as Grey Partridge, Black Partridge, Chakor, See-see Partridge, Houbara Bustard, Peregrine Falcon, and Egyptian Vulture. Reptilian fauna includes Saw-scaled

Viper, Indian Cobra, Desert Monitor Lizard, and various Agama species. Invertebrate fauna is represented by scorpions, beetles, and desert locusts.

Table 4-9 List of Biological Flora & Fauna

Category	Component	Key Species / Examples
Tree Species	Natural/Desert	Kandi (<i>Prosopis cineraria</i>), Lao (<i>Tamarix spp.</i>), Pelo (<i>Salvadora oleoides</i>)
	Cultivated	Shisham (<i>Dalbergia sissoo</i>), Keekar (<i>Acacia arabica</i>), Eucalyptus
	Fruit/Orchards	Dates, Mango, Guava, Citrus, Ber (<i>Zizyphus jujuba</i>)
Flora	Shrubs & Herbs	Karir (<i>Capparis aphylla</i>), Desert Teak (<i>Tecoma undulata</i>), Milk Broom
	Aquatic/Riparian	<i>Mentha longifolia</i> , <i>Rumex obtusifolius</i> (found near canals and streams)
	Major Crops	Wheat, Sorghum (Jowar), Barley, Mustard, Rice
Fauna (Birds)	Game Birds	Grey Partridge, Black Partridge, Chakor, See-see Partridge
	Migratory/Rare	Houbara Bustard, Peregrine Falcon, Egyptian Vulture
Mammals	Wild Carnivores	Asiatic Jackal, Desert Fox, Jungle Cat
	Wild Herbivores	Chinkara Gazelle, Cape Hare, Indian Crested Porcupine
	Mountain Species	Sindh Ibex, Urial (western mountainous fringes)
	Livestock	Cattle (Bhagnari breed), Sheep, Goats, Camels
Others	Reptiles	Saw-scaled Viper, Indian Cobra, Desert Monitor Lizard, Agamas
	Invertebrates	Scorpions, various Beetles, and Desert Locusts

4.3.2 Floods

Severe monsoon rainfall in District Jhal Magsi frequently causes flooding due to runoff from surrounding catchments, inadequate drainage capacity, and overtopping of drainage channels. Flood events inundate villages, agricultural lands, roads, and public infrastructure, resulting in loss of livelihoods, crop damage, disruption of services, and increased risk of waterborne diseases. The 2022 floods particularly caused extensive damage across the district, highlighting its high vulnerability to recurring flood hazards.

4.3.3 Protected and Historical Area

There are no wildlife protected areas in the project areas, nor are any of the historical buildings protected

4.3.4 Trees and Vegetations Status

As per the initial baseline survey, the assessment of trees and vegetation for the Gandava town project indicates that no trees are anticipated to be felled during implementation. The project alignment has been carefully reviewed, and there are no trees located within the right-of-way (ROW).

4.4 SOCIO-ECONOMIC BASELINE

4.4.1 General

As part of the Environmental and Social Management Plan (ESMP) preparation, a comprehensive socio-economic baseline assessment was conducted for the Gandava Town project area, covering four villages: Muhala Saqidue, Dargah Hazrat Abad, Syed Farooq, and Gandava City. The assessment analyzed demographic trends, livelihood sources, availability of basic services, and the condition of local infrastructure.

An updated field survey conducted in September 2025 further examined the current socio-economic situation and reviewed the ongoing impacts of the 2022 floods on households, livelihoods, and community resilience.

4.4.2 Data Source and Methodology of Baseline Survey

The socio-economic baseline survey for the Sub-project 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 the areas.

A household survey was carried out in the subproject area to understand the perspective of the local community. The area has around 225 households with a total population of nearly 1575 people. Out of these, 70 households were selected for the survey.

During the process, 70 individuals were interviewed, including 47 men, 16 women, and 07 others such as school children. This sample represents about 31.11% of the male and female household members, giving a fair picture of community perspectives.

4.4.3 Evaluation Approach & Sampling Strategy

To understand the community better, information was gathered through household surveys, interviews, and direct field visits, supported by local secondary sources. The sampling followed a two-step process. First, Union Councils within the project area were selected to represent the wider community. In the second stage, 70 households were chosen proportionally across different groups - poor, middle-income, better-off, and vulnerable - so that everyone's circumstances were fairly reflected

4.4.4 Sampling Strategy and Tools

The sampling process was carried out in two distinct phases using structured survey instruments. In the initial phase, UC and Union Tehsil were chosen through a random selection method to secure unbiased geographic coverage. In the subsequent phase, 225 households were identified through proportional sampling. This ensured balanced inclusion of households across socio-economic categories, including poor, vulnerable, middle-income, and relatively better-off groups, reflecting their actual distribution within the community.

In compliance with the requirements of the World Bank Environmental and Social Framework (ESF), particularly for stakeholder engagement, baseline assessment, and risk identification, the following tools and instruments were utilized:

- Structured Household Socio-Economic Survey Questionnaire (for quantitative baseline data collection)
- Key Informant Interview (KII) Checklists (for consultations with local leaders, community representatives, and relevant government officials)
- Focus Group Discussion (FGD) Guides (separate sessions conducted with men, women, and vulnerable groups to ensure inclusive participation in line with ESS10 requirements)
- Stakeholder Mapping and Analysis Matrix
- Vulnerability Assessment and Screening Format

- Observation Checklist (for ground-truthing and physical verification of settlement patterns and infrastructure)
- Secondary Data Review, including data from the Pakistan Bureau of Statistics, District Administration records, and Union Council records

The survey instruments covered the following key thematic areas:

- Agriculture and Natural Resources
- Primary Sources of Income and Livelihood
- Housing and Living Conditions
- Sanitation Facilities
- Health and Nutrition
- Education

4.4.5 Survey Instruments and Data Collection Tools

In accordance with the World Bank Environmental and Social Framework, a range of survey instruments was used to collect primary social baseline data. These included structured interview guides for Key Informant Interviews (KIIs) with community members and local elders to capture local knowledge, perceptions, and site-specific concerns. In addition, project-approved screening checklists were utilized during site visits to gather relevant field-level information. Other tools applied included village profiling formats, Focus Group Discussion (FGD) guides, and vulnerability assessment and screening formats.

The data collection focused on the agriculture and natural resources, Sources of income and livelihoods, Housing and living conditions, Sanitation facilities, Health and nutrition, Education.

4.4.6 Short Profile of District, Jhal Magsi

Total population of district Jhal Magsi is 149,225 (Census PBS, 2017) as compared to 109,941 in 1998; 51.5% is male population and 48.5% is female population in 2017. Male- female sex ratio is 106.57 and population growth rate is 1.74% per year. Urban population of the district is 7,825 (5.2%) and rural population is 141,400 (94.8%). District household size is 5.96, urban household size is 6.23 and rural household size is 5.94.

Table 4-10 Demography and Population Patterns

Population (2023)	203,368 persons
Urban Population	24,130
Rural Population	179,238
Area	3,615 Square KM
Population Density	56.26 persons/KM
Growth Rate	1.7%
Male Population	51.5%
Female Population	48.5%
Languages	In Jhal Magsi, the majority of people speak Balochi (around 60%). Brahvi (about 15%) while Sindhi (10%) and Siraiiki (5%) are present. Urdu (10%) is widely understood and used in schools, government offices, and formal communication.
Tehsils/Talukas	02 Tehsils and 01 sub-Tehsil, Jhal Magsi Tehsil, Gandava Tehsil, Mirpur sub-Tehsil
Municipal Committee	MC, Gandava. MC, Jhal Magsi
Union Councils	Gandava, Khari, Patri, Jhal Magsi, Hathiari, Panjuk, Kot Magsi, Barija, Mat Sindhur, Safrani, Saifabad, Akbarabad, and Mir Pur.

Main Towns	Jhal Magsi, Gandava, Mirpur, Kot Magsi, Abad, Khanpur Bhaltoor, Kotra, Altaz Khan, and Bhootani
Literacy Rate	25%
Male Literacy Rate	38%
Female Literacy Rate	11%
Main Crops	Wheat, barley, rapeseed & mustard, canola, sunflower, jowar, sesanum, moong, maash, moath, guar seed, cotton, tobacco, and sugarcane
Major Fruits	Mangoes, citrus, guavas, dates, watermelon, ber, and mulberry
Major Vegetables	Onion, tomatoes, okra, tinda, spinach, cabbage, carrots, bitter gourd, bottle gourd, pumpkin, cauliflower, brinjal, and coriander
Forest (Area)	32,518 HA
Total Black Topped Roads	1,034.0 km
Single Roads	99.0 km
Electricity	Quetta Electric Supply Company (QESCO) looks after supply and transmission of electricity
No.of Tel. Exchanges	02 Telephone Exchanges providing 767 landlines, 467 wireless phones, and 235 broadband connections.

4.4.7 Sensitive Receptors

The subproject area is located near several settlements, including Gandava (Main City), Syed Farooq, Siddiq Muhallah, and Darga Town, with distances ranging from a minimum of 0.5 km to a maximum of 2 km. These areas collectively comprise approximately 225 households with a total population of about 1,575 people. Settlements in close proximity, particularly Gandava (Main City) and Darga Town (0.5 km), are likely to experience direct impacts such as dust, noise, and construction disturbances, while Syed Farooq at 2 km may be subject to indirect impacts. Appropriate mitigation measures should be implemented to minimize potential effects on these communities.

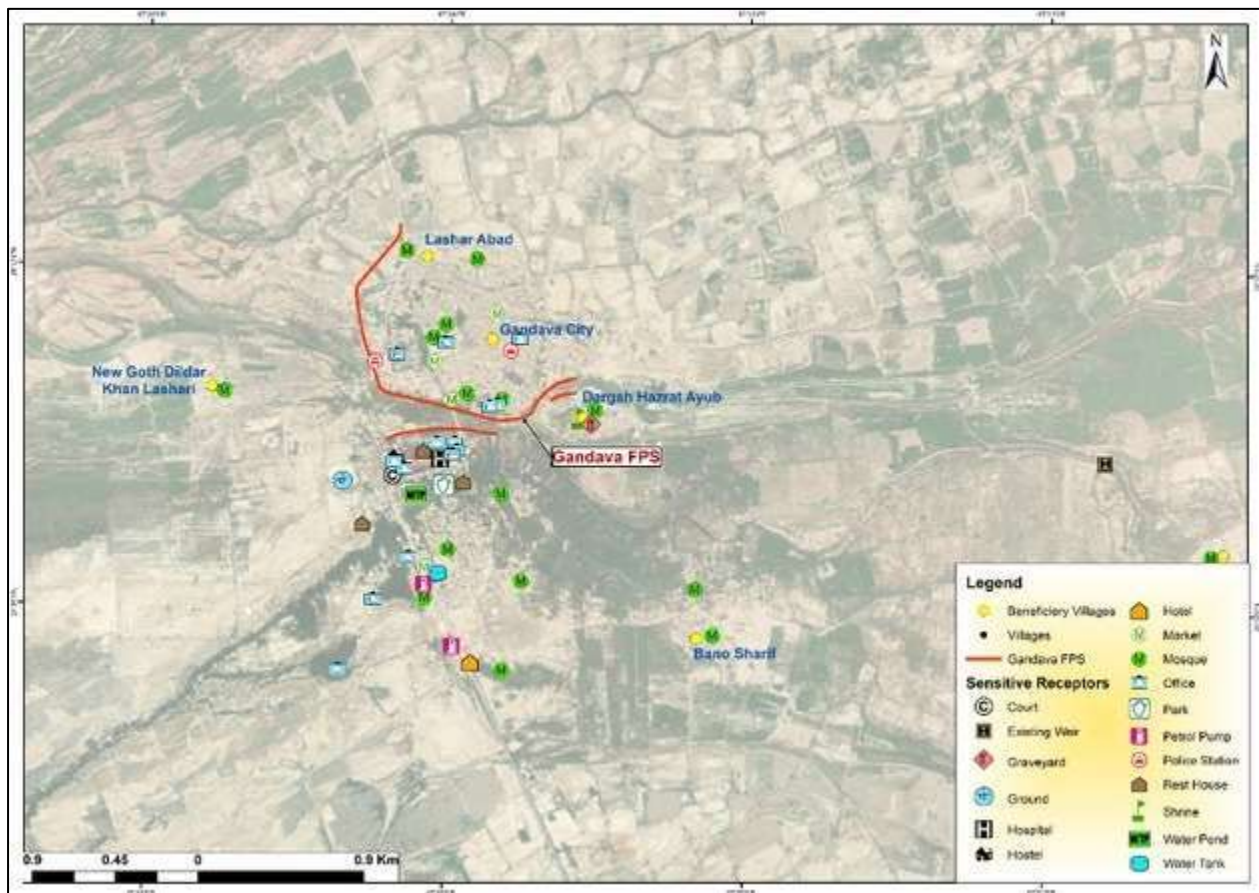


Figure-4-4: Map showing Sensitive receptors near the sub-project area

Table 4-11 Distance from the Subproject Area

Village Name	Number of households	Population	Distance from the Subproject Area
Gandava (Main City)	150	1050	0.50 km
Syed Farooq	15	105	2km
Siddiq Muhallah	25	175	1 km
Darga Town	35	245	0.5 km
Total	225	1575	

4.4.8 Key Social Indicators

Key social indicators of the proposed project areas are described as below:.

Household Survey

- Total households in the Gandava Town area: 225
- Total population: 1575
- Households surveyed: 70
- Individuals interviewed: 70 (47 men 16 women and 7 others)
- Sample represents 31.11% of male and female household members

4.4.8.1 Education Facilities

Education facilities in the project area include one primary, one middle, and one high school in Saddiqu Muhala, Gandava, and Dergha Town. Although these institutions provide basic educational coverage, their overall condition remains weak. School infrastructure is generally poor, and issues related to low student enrollment were observed. In addition, distance to schools poses a challenge for many students, particularly those living in outlying areas, which affects regular attendance and continuation of education.

4.4.8.2 Health Facilities

The sub-project area Health facilities in Gandava Town include two hospitals and one private dispensary (Saddiq Mulla). Despite the presence of these facilities, healthcare services remain limited due to the shortage of qualified doctors and inadequate basic medical facilities. As a result, residents often face difficulties in accessing proper diagnosis and treatment, particularly for emergencies and specialized medical needs.

For emergencies, specialized treatment, or advanced medical care, residents must travel to the District Headquarters Hospital in Jhal Magsi, or, in critical cases, to major hospitals in Karachi.

4.4.8.3 Water Supply and Sanitation

- The sub-project area has a total of 10 tubewells, of which 6 are functional while 4 remain non-functional. The existing water supply scheme is inadequate to meet the drinking and domestic water needs of the community.
- Due to limited supply, communities rely heavily on groundwater, collected from nearby private wells. In many cases, water is transported using donkeys or other livestock, reflecting both the scarcity of water sources and the absence of proper distribution systems.

4.4.8.4 Communication and Electricity

- Telecommunication: Landline telephone services are not available in the sub-project area, and mobile network coverage remains weak. Residents rely on mobile signals from Jhal Magsi Tehsil, located approximately 40 km away.
- Electricity: All households are connected to the national electricity grid (K-Electric); however, frequent load shedding significantly restricts power availability to around 8 hours per day.
- Energy and Cooking Fuel: The area has no natural gas supply. Residents depend on LPG, gasoline, bushes, and firewood to meet their cooking and heating requirements.

4.4.8.5 Transport

- The sub-project area is located approximately 40 km from Jhal Magsi and 343 km from Quetta City.
- Common modes of transport include minibuses, rickshaws, pickups, and motorbikes, which are used for daily mobility and access to nearby towns.
- Link roads connecting the four villages consist mostly of kacha tracks that are poorly maintained and in need of urgent rehabilitation to improve accessibility and support community mobility.

4.4.8.6 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 conflicts past or present are associated with the project area.

4.4.8.7 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 Gandava Town command area, which includes four villages. The nearest village is located approximately 1.5 km from the sub-

project site. The overall population of the surveyed area is estimated at 1575 individuals. The detailed demographic information is presented in the table below:

Table 4-12: Number of households and total population

Name of Villages	Number of Households in Village	Total Population
Gandava Town 04 Villages	225	1575
Total household and Population	225	1575

4.4.8.8 Religion

The population of the sub-project area is predominantly Muslim, comprising approximately 90% of the total population, while the remaining 10% belong to the Hindu community.

4.4.8.9 Respondent's Relationship with Head of Household

During the survey, 75% of the respondents were heads of households who participated directly in the interviews. Additionally, 10% of respondents were brothers, 05% were sons, and 05% were wives of the household heads. Female-headed households accounted for 05% of the total respondents.

4.4.8.10 Family Size

The survey data indicates that household sizes vary significantly across the sub-project area. Approximately 25% of households comprise 1–5 members, while 30% of households have 5–10 members. Around 25% of households consist of 10–15 members, whereas 20% of households include 15 or more members. Overall, the sub-project area includes 225 households with a total population of 1,575 persons, resulting in an average household size of approximately 7.0 persons per household.

4.4.8.11 Family System

Approximately 50% of the community prefers living in a joint family system, while 50% 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.

4.4.8.12 Marriage

Data from the table below indicates that residents of the sub-project area largely prefer marriages within their families, with 50% of marriages occurring among relatives. However, 50% 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.

4.4.8.13 Health Problems

Based on the initial baseline survey, the communities in the project area face several health challenges. The most common illnesses include malaria, acute respiratory infections (ARI), diarrhea, cardiac problems, and eye infections. Limited access to healthcare facilities, poverty,

and seasonal migration of residents contribute to delayed treatment and poor health outcomes. These conditions highlight the need for improved medical services and awareness programs to support the well-being of the local population.

4.4.8.14 Poverty Distribution

According to BRACE PSC census, district Jhal Magsi is on 5th position in terms of total number of poor households falling in (0-23) poverty band. Overall, 58.5% households fall in (0-23) poverty band and the remaining 41.5% households fall in (24-100) poverty band. Moreover, 15.4% households fall in Ultra Poor (0-11), 26% households fall in Vulnerable Poor (12-18), 17% households fall in Transitory Poor (19-23) and 41.5 % households fall in Non-Poor (24-100) poverty band. (SOURCES: BRDCEP, RSPN)

4.4.8.15 Livestock

The average number and type of livestock owned in Gandava Town villages are given in the following table:

Table 4-13: Average No & Type of Livestock Ownership

Livestock Ownership	Gandava Town Village Avg/HH
No. of Buffalos	8
No. of cows	7
No. of Goats	20
No. of Sheep	06
No. of Oxen	01
No. of chicken	19

4.4.8.16 Source of Fodder

In the project area, livestock is an important livelihood source, and fodder is mainly obtained from natural grazing lands, crop residues, and locally grown fodder crops. Seasonal availability is a major constraint, as most fodder is collected during the winter months when residents are present, while grazing during the dry season is limited. This reliance on natural and farm-based fodder reflects the semi-nomadic livestock practices and small-scale farming systems in the district.

4.4.8.17 Source of Livelihood and Income

The economy of Jhal Magsi District is predominantly rural and agriculture-based. Most households rely on farming, sharecropping, and livestock rearing as their primary sources of income, with seasonal crops grown under rain-fed and flood-based irrigation conditions. A significant portion of the population consists of small farmers, landless laborers, and nomadic or semi-nomadic communities who depend on daily wage labor, particularly during the agricultural season. Limited industrial activity and few alternative employment opportunities mean that income levels remain low, and many households experience seasonal unemployment, especially outside the winter cultivation period. Small-scale trading, government employment, and remittances provide supplementary income for a small segment of the population.

The baseline survey shows that agriculture is the primary source of income for households in Gandava Town FPB villages, with monthly earnings ranging from PKR 15,000 to PKR 20,000. All households also rely on secondary income sources such as livestock, transportation, small

businesses, and salaried employment, generating an additional PKR 15,000 to PKR 20,000 per month.

4.4.8.18 Agriculture Tools and Farm Machinery

In Jhal Magsi District, agriculture is predominantly small-scale and largely traditional. Most farmers rely on basic hand tools such as hoes, spades, sickles, and plows for cultivation. Use of modern farm machinery is limited, with only a few farmers having access to tractors, threshers, or irrigation pumps. This reliance on manual labor and minimal mechanization reflects the low-income levels and small farm sizes in the district, which constrains productivity and limits the adoption of more efficient agricultural practices.

4.4.8.19 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 50% of farmers own a spray machine. Other essential farm machinery, including tractors for ploughing and threshers, is typically rented as needed.

4.4.8.20 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 99.07) per crop.

Table 4-14: Estimated Expenses per Year per Acre

Items	Expenses/Acre	Expenses/Acre in USD
Ploughing	8,000	28.31
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	28,000 PKR	USD 99.07

4.4.8.21 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 4-15: Average Seasonal Earnings/acre

Seasons	Average Seasonal Earning/Acre (in PKR)	Avg Earning/ Acr in USD23
Rabi (autumnal)	28,000 PKR	USD 99.07
Rabi and Kharif (Both)	28,000 PKR	USD 99.07

4.4.8.22 Agricultural landholding and cropping pattern

Tenancy is relatively limited in the sub-project area, where approximately 75% of agricultural land is cultivated by owner farmers, while the remaining 25% is operated by tenants. The land is generally fertile and supports a variety of crops throughout the year.

During the Kharif season (spring–summer), farmers primarily cultivate sugarcane, cotton, sorghum, and vegetables. In the Rabi season (autumn–winter, April to October), the dominant crops include wheat, pulses, and lentils, reflecting a diverse and productive agricultural pattern.

4.4.8.23 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 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 Gandava area.

4.4.8.24 Pit Latrines and Toilets

In the Gandava Town area, approximately 50% of households have toilets; however, these are not connected to a proper sanitation system, and open defecation is still practiced in the community.

4.4.8.25 Land Ownership

Land in the Gandava Town FPB 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. Land ownership in Jhal Magsi is sometimes contested, with influential landlords and tribal chiefs have nearly 80% of the land is concentrated in the hands of a few landlords, leaving ordinary families with limited control over their traditional holdings.

Table 4-16 Member of Household Own Land in Rural Areas

Ownership	Percentage
Owner	44
Landless	56
Total	100

Source: MICS, 2010

4.4.8.26 Community-Based Organization (CBOs) and NGOs

The following NGOs are working in the district Jhal Magsi

Table 4-17 Community-Based Organization (CBOs) and NGOs

S. No	Name of NGOs
1	Balochistan Rural Support Programme (BRSP)
2	United Nation International Children Emergency Fund (UNICEF)
3	Peoples Primary Health Initiative (PPHI)
4	World Health Organization (WHO)
5	Institute of Rural Management (IRM)
6	Benazir Income Support Programme (BISP)
7	National Commission for Human Development (NCHD)

4.4.8.27 Type of Housing

In the sub-project area, 30% of houses are pucca (constructed with brick and concrete), 20% are semi-pucca, and 50% are katcha (mud-built) houses.

4.4.8.28 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.

4.4.8.29 Land Ownership

Land in the Gandava Town 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.

4.4.8.30 Customary Institutions

The tribal system remains active in the sub-project area, where the Magsi tribe is the predominant customary authority.

4.4.8.31 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.

4.4.8.32 Law and Order Situation

The law-and-order situation in district Jhal Magsi, including the sub-project area, is normal and under the control of the district administration and law enforcement agencies (police and FC).

4.4.8.33 Community Cultural Properties

The following community cultural properties are found in the Gandava Town sub-project area. These cultural properties do not fall within the flood protection bund alignment or RoW. The details are illustrated in the following table.

Table 4-18: Community Cultural Properties

Village	Graveyard	Mosque	In RoW
Gandava Town	4	06	No

4.4.8.34 Community Awareness about Sub-Project Works

Communities in the Gandava Town 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 Gandava Town Village in Sep, 2025 to ensure inclusive community engagement and participation in the project.

4.4.8.35 Community Demands

During public consultations and socio-economic baseline assessments for the Gandava Town sub-project in District Jhal Magsi, communities identified several priority needs essential for improving their living standards and reducing long-standing service gaps. The major demands raised by local households and community representatives are elaborated below:

- **Education Facilities**

Communities strongly emphasized the need for improved and upgraded educational institutions. This includes the construction of additional classrooms, provision of qualified teachers (especially female teachers), adequate boundary walls, safe drinking water, and functional washrooms in schools. They also expressed the need for a higher secondary school, as students currently travel long distances to access further education.

- **Health Services**

Residents reported limited access to quality healthcare. They requested the establishment or upgrading of Basic Health Units (BHUs), availability of trained medical staff, provision of essential medicines, maternal and child health services, and regular vaccination campaigns.

- **Water Supply and Sanitation**

A reliable supply of clean drinking water was one of the most urgent demands. Communities requested tube wells, hand pumps, and solarized water supply schemes. They also highlighted the need for improved sanitation systems, including drainage channels and proper waste disposal arrangements.

- **Road and Transport Infrastructure**

Poor Road conditions hinder mobility and access to markets, schools, and health facilities. Communities demanded the rehabilitation of link roads, widening of pathways, and the provision of safe transport facilities, especially during the rainy season.

- **Livelihood and Agriculture Support**

As the majority of households depend on agriculture and livestock, communities requested support such as improved irrigation channels, availability of certified seeds, fertilizers, pesticides, livestock vaccination, and training on modern farming techniques to enable sustainable income generation.

4.4.8.36 Consultation Meeting with Community and Elders for the Restoration of Gandava Town

A consultation meeting was conducted with community members and local elders to discuss the restoration works of Gandava Town Flood Protection Bund. The session provided a platform for stakeholders to share their concerns, highlight priority needs, and offer valuable insights based on their traditional knowledge and experience of the area. Their feedback will play a key role in guiding project planning, ensuring community acceptance, and enhancing the effectiveness of restoration activities.

4.4.8.37 The Positive Impacts of FPB Gandava Town

Gandava Town, with its total command area of 730 acres, stands as more than just a settlement it is a shield, a source of opportunity, and a promise of resilience for the surrounding communities. Out of this vast stretch of land, 200 acres are already cultivated, breathing life into the soil, while 530 acres remain uncultivated, holding potential for future growth and prosperity.

One of the most profound impacts of Gandava Town is its role in safeguarding communities from floods. In a region where floods can devastate lives and livelihoods, Gandava acts as a protective barrier. Its presence ensures that nearby villages and agricultural lands remain secure, sparing families from the recurring fear of losing their homes and crops. This protection extends beyond its immediate boundaries, offering safety to the nearest city and reinforcing the town's importance as a guardian of both people and land.

Beyond safety, Gandava Town contributes to the creation of temporary jobs, offering local residents opportunities to earn and sustain their families. These jobs, though short-term, bring dignity and relief, especially in times when economic opportunities are scarce. They also foster a sense of community, as people come together to work for the betterment of the town and its surroundings.

The town's impact on agriculture is equally significant. By shielding farmland from flood damage, Gandava ensures that cultivated areas remain productive and that farmers can continue to harvest without fear of losing their crops. This stability strengthens food security and supports the livelihoods of those who depend on agriculture as their primary source of income.

In essence, Gandava Town is more than its acres of cultivated and uncultivated land. It is a story of resilience, protection, and opportunity a place where safety from floods, job creation, and agricultural security converge to uplift not just the town itself, but the wider region that depends on it.

5

STAKEHOLDER CONSULTATIONS

5 STAKEHOLDER CONSULTATIONS

This section presents the process, outcomes, and key findings of stakeholder consultations carried out for the proposed Sub-project 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:

- The stakeholder consultation process was undertaken with the following objectives:
- To disclose relevant information regarding the Sub-project 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 Sub-project 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 Sub-project 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 Sub-project 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 Institutional stakeholders

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

5.2.2 Non-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 Gandava Town Flood Protection Bund area. 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 ESMP preparation through a combination of public meetings, Key Informant Interviews (KIIs), and Focus Group Discussions (FGDs). Consultations were inclusively conducted in local languages and documented to ensure stakeholder views were accurately recorded. The consultation process adhered to national consultation guidelines as well as the requirements of the World Bank ESF and the Project SEP. As ESMP is a live document, the consultations will be conducted throughout the project implementation, resulting in justification of the number of consultations in each sub-project area.

Details of non-institutional consultations conducted along the Subproject area are summarized in Table 5.1. A pictorial record of consultation meetings with community elders and members is provided in Annexure-X.

Table 5-1: Details of Non-Institutional Consultations

Location	No. of Respondents	Date
Siddiq Muhallah	12	15/09/2025
Darga Town	12	15/09/2025
Syed Farooq	8	21/09/2025
Gandava City	15	21/09/2025
Women Consultations in Gandava City	8	15/09/2025
Women Consultations in Gandava City	8	21/09/2025
Others	7	21/09/2025

5.4 KEY ISSUES RAISED BY NON-INSTITUTIONAL STAKEHOLDERS

During consultations conducted under the project “Restoration of Gandava Town Flood Protection Bund, District Jhal Magsi, Balochistan,” community members residing along the right and left side highlighted key environmental and social (E&S) concerns associated with the subproject. The major issues identified include:

- 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 Sub-project, 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 constitutes an integral component of effective project planning and implementation, ensuring that relevant government institutions and stakeholders remain adequately informed and actively involved throughout the project cycle. In accordance with the requirements of the World Bank Environmental and Social Framework (ESF), particularly Environmental and Social Standard (ESS-10) on Stakeholder Engagement and Information Disclosure, inclusive and transparent consultations contribute to improved environmental and social performance, strengthened institutional coordination, and informed decision-making during project implementation.

As part of the stakeholder engagement process for the project titled “Restoration of Gandava Town Flood Protection, District Jhal Magsi, Balochistan,” institutional consultations were conducted with key government departments and relevant stakeholders regarding the proposed restoration works. The consultations were carried out by the Environmental, Social, and Technical Team of Cameos Architects & Consultants in coordination with the district administration and line departments.

The consultation meetings were attended by Deputy Commissioner Syed Rehmatullah, Assistant Commissioner Abdul Majeed Muhammad Hossani, Sub-Divisional Officer (Irrigation) Farukh Khokar, and Agriculture Officer Khalil Mengal, along with representatives of Cameos Architects & Consultants, including the Environmental Specialist, Social Specialist, Hydraulic Engineer, and Survey Team. During the meetings, the participants were briefed on the objectives of IFRAP, the scope of the proposed subproject, implementation arrangements, anticipated environmental and social impacts, and the applicable environmental and social safeguards requirements.

Discussions focused on the existing flood-related challenges faced by Gandava Town, the proposed restoration and strengthening measures, project implementation strategy, and the expected benefits to local communities and agricultural lands. The Voluntary Land Donation (VLD) process was also discussed, and it was clarified that no permanent land acquisition is anticipated under the proposed restoration works. The Agriculture Department highlighted the significance of the project in reducing flood damages to agricultural lands and improving the resilience of farming communities within the project area.

Law and order conditions within the project area were also reviewed during the consultations. The district administration confirmed that no significant security concerns currently exist that could adversely affect project implementation. However, continued coordination with district authorities and relevant law enforcement agencies was recommended to ensure the safe and uninterrupted execution of project activities throughout the construction period.

All participating officials expressed their support for the proposed intervention and assured full cooperation from their respective departments during project implementation. The consultations concluded with a shared understanding regarding the importance of continuous stakeholder engagement, effective inter-departmental coordination, and regular communication among all stakeholders to ensure environmentally and socially sustainable implementation of the subproject.

5.6 FUTURE CONSULTATIONS AND DISCLOSURE

Stakeholder engagement will continue throughout Sub-project 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 Sub-project implementation.

6

IMPACT ASSESSMENT & MITIGATION MEASURES

6 IMPACT ASSESSMENT AND MITIGATION MEASURES

6.1 GENERAL

The implementation and consequent operation of the Sub-project 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 Sub-project 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 Sub-project.

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 Sub-project 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

Step 1	Criteria for Determining Significance	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.
Step 2	Determine the magnitude of potential impacts	Assessing the scale and describing the anticipated impacts either quantitatively (where possible) or qualitatively or both.
Step 3	Identify of mitigation measures	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.
		Compensating for the impact by replacing or providing substitute resources or environments.
Step 4	Evaluating residual impact	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.

Step 5	Identify monitoring requirements	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.
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6.3 SCREENING OF POTENTIAL E&S IMPACTS

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

The screening checklist in Annexure-K has been reconciled with this ESMP narrative and impact assessment. Borrow material requirements, potential soil/water contamination from fuel/oil, OHS and community health and safety risks, construction traffic, natural hazard/flood exposure, temporary access restrictions, women's mobility considerations, sediment/spoil handling and ESS7 applicability are now aligned with the mitigation measures and monitoring plan. No Indigenous Peoples as defined under World Bank ESS7 are present in the sub-project area; vulnerable/disadvantaged groups are addressed under ESS1/ESS10 measures.

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 Sub-project.

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 Sub-project 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 Sub-project 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 channels and damaged structures 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 Sub-project 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 Flood Protection Bund Gandava Town.

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		●		●	★			●		●		●		★	
Flora:															
Shrubs		●		●	●			●		●			●	★	
Trees		●				●		●		●		●		★	
Fauna:															
Mammals		●		●		●		●		●		●		★	
Birds		●		●	★			●		●		●		★	
Health and safety	★			●	★			●		●		●		★	
Community health and safety	★			●	★			●		●			●	★	
Economic activity	★		★		★		●	●	●	●	●				
Legend: 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	★		★		★		★			★		★		★	
Flora:															
Shrubs	★		★		★		★			★		★		★	
Trees	★		★		★		★			★		★		★	
Fauna:															
Mammals	★		★		★		★			★		★		★	
Birds	★		★		★		★			★		★		★	
Legend: Negative Impact (●) Positive Impact (★)															

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

Sr. No.	Environmental Component 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	Social disturbance	Disruption of Public utilities	Employment	Traffic issues	Economic activity	Health and safety
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

Legend:

O = No impact LA = Low Adverse MA = Medium Adverse HA = High Adverse MB = Medium Beneficial HB = High Beneficial LB = Low Beneficial NA=Not Applicable

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

Sr. No.	Environmental Components 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

Legend:

O =No impact NA=Not Applicable LA = Low Adverse MA = Medium Adverse LB = Low Beneficial MB = Medium Beneficial HB = High Beneficial HA = High Adverse

6.5 ENVIRONMENTAL & SOCIAL IMPACTS AND MITIGATION MEASURES

This section presents the environmental and social impacts associated with the Restoration of Flood Protection Bund Gandava Town Left and Right Side, District Jhal Magsi. The assessment covers the design, construction and operation phases of the sub-project and follows a risk-based approach consistent with the World Bank Environmental and Social Framework (ESF), applicable national and provincial environmental legislation, and the mitigation hierarchy of avoidance, minimization, restoration and management.

The sub-project involves restoration and strengthening of the existing Gandava Town Flood Protection Bund on the left and right sides. The main works include site clearance within the approved footprint, earthwork excavation and filling, layer-wise compaction, dressing of bund crest and side slopes, placement of UV-stabilized polypropylene geotextile, stone pitching on bund slopes, gabion/apron protection along vulnerable toe sections, erosion and scour protection, borrow material use from approved sources, and restoration of temporary work areas.

The sub-project is intended to restore flood protection capacity, reduce flood exposure of Gandava Town and adjoining settlements, protect agricultural land and local infrastructure, and improve climate resilience. Potential adverse impacts are expected to be mostly temporary, localized and manageable through implementation of the mitigation measures described below.

6.5.1 Environmental Impacts

6.5.1.1 Topography and Soil Stability

The restoration of the Gandava Town Flood Protection Bund will involve localized earthworks, embankment strengthening, slope dressing, compaction, toe protection and use of borrow material. These activities may temporarily affect soil stability and surface drainage within the approved construction footprint.

Impacts / Risks

Design Phase

- Inadequate embankment geometry, slope design or crest level may increase the risk of erosion, overtopping, settlement or localized slope failure.
- Poorly designed toe protection, gabion/apron works or drainage arrangements may result in scour, gullyng or erosion during high-flow events.
- Inappropriate siting of borrow areas, camps, stockpiles or access routes may disturb agricultural land, drainage paths or community access.

Construction Phase

- Excavation, filling, slope dressing and compaction may cause localized erosion, dust generation and sediment movement.
- Poor compaction or use of unsuitable fill material may weaken embankment sections.
- Fuel, oil and lubricant spills from machinery may contaminate soil.
- Uncontrolled borrow excavation may cause land degradation, ponding, unsafe depressions and vector breeding.
- Unmanaged stockpiles may obstruct flood/drainage paths or affect nearby agricultural fields.

Operation Phase

- If the bund is not maintained, residual risks may include embankment erosion, settlement, toe scour, slope instability, damage to stone pitching/gabions and blockage of drainage paths.

- Poor maintenance may reduce flood protection performance and increase risk to adjacent settlements and agricultural land.

Mitigation Measures

Design Phase

- The FPB alignment, crest level, side slopes, toe protection and drainage arrangements shall be finalized in accordance with approved engineering design and site conditions.
- Embankment side slopes shall be designed with stable, erosion-resistant gradients suitable for local soil and flood-flow conditions.
- The design shall include adequate stone pitching, geotextile, gabion/apron protection and scour control at vulnerable reaches.
- Existing natural and seasonal drainage paths shall be maintained, and no design element shall create uncontrolled ponding or diversion of floodwater toward settlements or agricultural land.
- Borrow material requirements shall be assessed during design and shall be limited to approved sources.
- Camps, stockpiles, machinery yards and disposal areas shall be identified away from active flood paths, agricultural fields, settlements and sensitive receptors.

Construction Phase

- Earthworks shall be carried out in a phased manner to limit the area of exposed soil at any time.
- Fill material shall be placed in layers and compacted as per approved specifications.
- Exposed slopes shall be stabilized promptly through compaction, dressing, geotextile, stone pitching or other approved protection measures.
- Excavated material and stockpiles shall be placed only at approved locations away from flood/drainage paths, community tracks and agricultural land.
- Fuel storage, refuelling and machinery maintenance shall be carried out on impervious surfaces with drip trays, spill kits and secondary containment.
- Borrow material shall be obtained only from PIU/CSC-approved locations.
- Borrow areas shall be rehabilitated after use through re-grading, drainage provision and stabilization to prevent ponding, land degradation and safety hazards.
- Machinery movement shall be restricted to designated routes and work areas to avoid unnecessary disturbance of adjoining land.

Operation Phase

- The Irrigation Department/PIU shall inspect the restored bund before the monsoon season, after significant rainfall and after high-flow events.
- Erosion, settlement, cracks, animal burrows, toe scour, displaced stone pitching, damaged gabions or blocked drainage paths shall be repaired promptly.
- Unauthorized excavation, dumping, bund cuts or obstruction along the FPB corridor shall be prohibited.
- Routine maintenance shall include removal of debris, restoration of damaged slopes and repair of vulnerable sections before the next flood season.

6.5.1.2 Climate Change and Climate Resilience

The Gandava Town FPB is a climate resilience intervention designed to reduce exposure of settlements, agricultural land and local infrastructure to recurrent flood events.

Impacts / Risks

Design Phase

- If future rainfall intensity, flood frequency and recent flood behaviour are not considered, the restored bund may remain vulnerable to overtopping, erosion and structural damage.
- Inadequate freeboard, toe protection or slope protection may reduce long-term resilience.

Construction Phase

- Sudden rainfall or flash-flood flows during construction may damage incomplete embankment sections, erode exposed slopes, wash away construction material or create unsafe working conditions.
- Temporary obstruction of drainage/flood paths during construction may increase localized flooding or waterlogging.

Operation Phase

- Increased rainfall intensity and future flood events may impose higher hydraulic stress on the restored bund.
- Without regular maintenance, climate resilience benefits may decline over time.

Mitigation Measures

Design Phase

- Final design shall consider recent flood damage patterns, local hydrology and expected climate variability.
- Crest level, freeboard, side slopes, stone pitching, geotextile, gabion/apron protection and scour control shall be designed to withstand expected flood-flow conditions.
- Tie-in points with existing flood protection features shall be designed to avoid weak points and local breaches.
- Drainage continuity shall be maintained to avoid ponding, waterlogging or diversion of floodwater toward settlements.
- The design shall incorporate climate-resilient materials and construction specifications suitable for local floodplain conditions.

Construction Phase

- Major earthworks and slope protection activities shall preferably be scheduled during low-flow and dry periods.
- Temporary construction arrangements shall maintain natural flood/drainage paths to the extent practicable.
- Incomplete embankment sections shall be protected before forecast rainfall.
- Construction material, equipment, camps and stockpiles shall not be placed in active drainage/flood paths.
- The Contractor shall maintain an emergency preparedness arrangement for sudden rainfall, flash floods and evacuation of machinery/workers from exposed areas.

Operation Phase

- Pre-monsoon and post-flood inspections shall be carried out every year.
- Any erosion, settlement, slope failure, toe scour or damaged protection works shall be repaired before the next flood season.
- Flood-related damage and repair actions shall be recorded by the responsible O&M authority.
- Community feedback on flood behaviour, ponding or damage shall be documented and addressed through the GRM or local Irrigation Department mechanism.

6.5.1.3 Ambient Air Quality

Temporary air quality impacts may occur due to excavation, filling, hauling of borrow material, stockpiling, vehicle movement and operation of construction machinery.

Impacts / Risks

Design Phase

- Poor planning of haul routes, camp locations and stockpile areas may expose nearby settlements and agricultural fields to avoidable dust.
- Inadequate inclusion of dust-control requirements in contract documents may weaken implementation.

Construction Phase

- Fugitive dust may arise from earthworks, borrow material transport, stockpiles, unpaved access routes and movement of machinery.
- Exhaust emissions may arise from excavators, loaders, dumpers, trucks, tractors, compactors, generators and other equipment.
- Dust deposition may affect nearby houses, crops, trees and workers.

Operation Phase

- No significant routine air quality impact is anticipated during operation.
- Minor dust may occur during periodic maintenance, slope repair or removal of deposited material.

Mitigation Measures

Design Phase

- Camp sites, material storage areas, haul routes and machinery yards shall be selected to minimize exposure of settlements, schools, mosques, health facilities, agricultural fields and sensitive receptors.
- Dust suppression, covering of transported material, vehicle maintenance and prohibition of open burning shall be included in contractor obligations.

Construction Phase

- Water sprinkling shall be carried out on exposed surfaces, haul routes, access roads, stockpiles and excavation/filling areas, especially during dry and windy conditions.
- Fine material, soil, sand, aggregate and construction debris shall be covered during transportation.
- Stockpiles shall be located away from houses, crops, active drainage paths and public access routes.

- Vehicles and machinery shall be regularly maintained to minimize smoke and emissions.
- Open burning of waste, vegetation, packaging material or construction debris shall be strictly prohibited.
- Speed limits shall be enforced on unpaved access roads to reduce dust generation.
- Workers exposed to dusty conditions shall be provided with dust masks or appropriate respiratory protection.

Operation Phase

- No routine mitigation is required during normal operation.
- During maintenance works, dust suppression and controlled material handling shall be applied where required.
- Any disturbed surfaces shall be stabilized after maintenance activities.

6.5.1.4 Noise and Vibration

Noise and vibration impacts will mainly occur during construction due to operation of machinery, transport vehicles, compaction equipment, stone pitching and gabion works.

Impacts / Risks

Design Phase

- Inadequate planning of construction timing, access routes and machinery movement may increase disturbance to nearby communities and sensitive receptors.

Construction Phase

- Noise may be generated by excavators, loaders, dumpers, tractors, compactors, generators, concrete mixers and transport vehicles.
- Vibration may occur during compaction, movement of heavy machinery and loading/unloading of stones.
- Nearby settlements, mosques, schools, livestock and workers may experience temporary disturbance.
- Workers may be exposed to high noise levels.

Operation Phase

- No significant noise or vibration impact is anticipated during normal operation.
- Minor short-term noise may occur during maintenance works.

Mitigation Measures

Design Phase

- Contract documents shall require daytime scheduling of high-noise activities near settlements and sensitive receptors.
- Access routes and machinery movement shall be planned to minimize disturbance to communities.

Construction Phase

- High-noise activities shall be restricted to daytime hours, except for emergency works.
- Construction machinery shall be fitted with silencers/mufflers and maintained in good working condition.

- Pressure horns and unnecessary honking shall be prohibited near settlements, schools, mosques and work areas.
- Communities shall be informed in advance of high-noise activities.
- Workers exposed to high noise levels shall be provided with earplugs or earmuffs.
- Equipment generating abnormal noise or vibration shall be repaired or removed from site.
- Noise monitoring shall be conducted at representative sensitive locations if complaints are received or if high-noise activities continue for extended periods.

Operation Phase

- No regular mitigation is required during normal operation.
- Maintenance activities shall follow the same daytime scheduling and noise-control measures applied during construction.

6.5.1.5 Surface and Groundwater Quality

The sub-project area includes seasonal flood/drainage paths and agricultural land. Surface and groundwater quality may be affected if construction materials, fuel, wastewater or spoil are not properly managed.

Impacts / Risks

Design Phase

- Poor siting of camps, workshops, fuel storage or disposal areas may increase risk of contamination.
- Inadequate planning of drainage arrangements may cause ponding, sedimentation or localized contamination.

Construction Phase

- Excavation, filling, slope dressing and toe protection works may increase turbidity and sediment movement during rainfall.
- Fuel, oil, lubricants, cement slurry, wastewater and concrete washout may contaminate soil, surface runoff or shallow groundwater.
- Construction debris and spoil may enter seasonal drainage/flood paths.
- Poor sanitation at labour camps may create health and water-quality risks.

Operation Phase

- No significant adverse impact is anticipated during normal operation.
- Blocked drainage paths or illegal dumping along the FPB may affect local drainage and water quality.

Mitigation Measures

Design Phase

- Camps, workshops, fuel storage, machinery yards and disposal areas shall be located away from active flood/drainage paths, water points, settlements and agricultural land to the extent practicable.
- Surface drainage shall be incorporated into construction planning to avoid waterlogging and sediment movement.
- Contract documents shall require proper wastewater, fuel, spoil and waste management.

Construction Phase

- Construction camps shall be provided with septic tanks/soak pits or other approved sanitation arrangements.
- Vehicle and machinery washing shall not be allowed in or near watercourses, drainage paths or agricultural fields.
- Fuel and lubricants shall be stored in covered and bunded areas with spill kits available on site.
- Concrete washout and cement slurry shall be collected in designated lined areas and shall not be discharged into drains, flood paths or agricultural land.
- Temporary silt barriers, sediment traps or settling arrangements shall be used where required.
- Construction debris, spoil and packaging material shall not be dumped in drainage/flood paths.
- Any spill shall be contained, cleaned immediately and reported to CSC/PIU.

Operation Phase

- Periodic inspection shall ensure that drainage/flood paths remain free of waste, debris and unauthorized dumping.
- Any accumulated debris or sediment affecting flow shall be removed.
- Maintenance waste shall be collected and disposed of at approved locations.

6.5.1.6 Waste Management

Construction activities will generate excavated soil, spoil, stones, packaging material, domestic waste from camps, and small quantities of used oil, oily rags and other hazardous waste, sample attached in Annexure-S.

Impacts / Risks

Design Phase

- Lack of pre-identified disposal locations may result in unmanaged dumping.
- Lack of sediment/spoil screening criteria may result in unsuitable or contaminated material being reused in embankment works.

Construction Phase

- Uncontrolled disposal of spoil may obstruct flood/drainage paths, damage agricultural land or create community nuisance.
- Hazardous/oily waste may contaminate soil and water.
- Domestic waste from camps may attract vectors and create sanitation issues.
- Unsuitable material may weaken embankment performance if reused without approval.

Operation Phase

- Minor waste may arise from periodic maintenance, debris removal and repair activities.
- Improper disposal of maintenance waste may create localized impacts.

Mitigation Measures

Design Phase

- Requirements for waste segregation, spoil handling, sediment screening, reuse criteria and approved disposal locations shall be included in contract documents.
- Clean excavated material shall be reused where technically suitable and approved by CSC.
- Disposal sites shall be approved by PIU/CSC and located away from settlements, agricultural land, drainage/flood paths and sensitive receptors.

Construction Phase

- Waste shall be segregated into reusable material, inert construction waste, domestic waste and hazardous/oily waste.
- Clean excavated soil may be reused for embankment filling, slope dressing, backfilling or site restoration after CSC approval.
- Unsuitable spoil and construction debris shall be transported to approved disposal sites.
- Spoil shall not be dumped in flood paths, drainage channels, agricultural fields, access tracks or near houses.
- Used oil, lubricants and oily waste shall be stored in sealed containers with secondary containment and handed over to licensed recyclers or approved handlers.
- Domestic waste shall be collected regularly and disposed of through approved local arrangements.
- Open burning and unauthorized dumping shall be strictly prohibited.
- Spill response materials shall be available at fuel storage, refuelling and maintenance locations.

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 samples from the accumulated silt deposits along the 18,5 km reach of the Umrani, Magsi, and Rupa Drains. Samples shall be collected from locations evenly distributed along the drain alignment, with additional samples taken at any point where visual inspection indicates potential contamination (e.g., discoloration, odor, proximity to discharge points). Each sample shall weigh a minimum of 2 kg and be collected, preserved, 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.

6.5.1.7 Hydrological Risks during Construction: Flood Protection Bund, Gandava Town

The proposed rehabilitation works for the Gandava Town Flood Protection Bund (left and right side) involve earthwork excavation, filling, layer-wise compaction, slope dressing, placement of UV-stabilized polypropylene geotextile (40 microns), stone pitching on bund side slopes (2H:1V), gabion/apron protection along the toe, and scour protection works. The bund is designed to intercept and safely manage flash flood flows generated from a catchment area of **8,136 km²**, with a longest stream length of 220 m and a catchment slope of 0.0103 m/m, draining through the Kachhi Plain toward Gandava Main City and adjacent settlements. Construction activities will temporarily expose incomplete embankment sections and partially stabilized slopes to sudden flood risk, particularly during the monsoon season (July to September).

A. Impacts / Risks: Construction Phase

The following hydrological risks are identified during the construction phase:

1. Sudden inflow from hill torrents

The Gandava FPB alignment receives uncontrolled flash flood flows generated from the surrounding 8,136 km² catchment. Hill torrents originating from the Central Brahui Range and associated upland drainage systems can generate rapidly concentrating flows with little advance warning (30–60 minutes). An unseasonal or early-onset monsoon event during construction may lead to:

- Inundation of incomplete or partially compacted embankment sections, causing erosion, slope instability, and loss of earthworks.
- Worker safety risks, including drowning, entrapment, and evacuation hazard from exposed bund crests and toe works.
- Scour and erosion at the bund toe, displacing gabion apron works that have not yet achieved full structural integration.
- Damage to or loss of construction equipment, geotextile rolls, stone stockpiles, and compaction plant left within or adjacent to the bund footprint.

2. Temporary obstruction of drainage/flood paths

If the bund footprint, construction spoil stockpiles, borrow material, or temporary camp and machinery facilities are placed in or across seasonal flood/drainage paths adjacent to the FPB corridor, water may pond, back up, or be diverted toward:

- Gandava Main City (150 households, ~1,050 persons, 0.5 km from works).
- Siddiq Muhallah (~175 persons, 1.0 km) and Darga Town (~245 persons, 0.5 km).
- Adjacent agricultural land and field drainage channels in the Kachhi Plain.

Prolonged ponding or uncontrolled drainage diversion can cause crop damage, soil waterlogging, and loss of livelihood for farming communities in the project influence area.

3. Embankment slope instability during rainfall

Exposed bund sections under active construction: prior to placement of geotextile, stone pitching, or compaction to the approved density: are highly vulnerable to rainfall-induced saturation. Embankment soils in the project area consist of alluvial deposits (Clayey Silt, Silty Clay, and Gravely Silt) which are susceptible to rapid loss of shear strength on wetting. This may lead to:

- Slope slumping, surface erosion, or localized slope failure of the bund face.
- Increased sediment loading on the bund toe and adjacent flood paths.
- Safety hazards for workers operating on or near unstable slopes.

4. Scour and undermining of incomplete toe protection

During a flood or high-flow event, an incomplete gabion apron, insufficiently keyed-in toe protection, or unpitched bund face presents a critical vulnerability. Scour depth at the design section is 3.20 m (silt factor 4.75): if toe protection is not fully installed before a flow event, progressive undermining can initiate a failure mechanism (overtopping → toe scour → slope erosion → breach) with potentially irreversible consequences for the bund and the settlements it protects.

5. Sediment release affecting downstream water quality

Earthwork excavation, slope dressing, and borrow area operations may release fine sediment (Clayey Silt and Silty Clay fractions) into seasonal drainage paths during rainfall. If not managed, this may affect:

- Irrigation water quality for agricultural land in the Kachhi Plain command area.
- Domestic water uses where communities rely on surface water or shallow groundwater.
- Aquatic habitats in downstream seasonal water bodies.

B. Mitigation Measures: Design and Construction Phase

Design Phase:

The Gandava FPB has been designed using climate-resilient engineering criteria in accordance with USACE EM 1110-2-1913 (Levee Design), USACE EM 1110-2-2300 (Earth/Rock-Fill Dams), and USACE EM 1110-2-1902 (Slope Stability). Design parameters incorporate:

- Crest width of **6.0 m** to provide adequate structural mass and overtopping resistance.
- Side slopes of **2H:1V** (river side and land side) designed for stability under saturated conditions in alluvial soils.
- Gabion protection thickness of **0.75 m** with 40-micron UV-stabilized polypropylene geotextile as a filter layer below.
- Scour protection designed to a scour depth of **3.20 m** (silt factor 4.75) to resist toe undermining under peak flood conditions.
- Minimum freeboard of **0.5 m** above design flow depth to accommodate climate variability and SSP2-4.5 projected increases in flood peak discharge.
- Tie-in points with existing flood protection features designed to avoid weak points and localized breaches.

Construction Phase:

1. Phased earthworks with maintained flood/drainage path continuity

- Earthworks (excavation, filling, compaction) shall be executed in phases limited to manageable section lengths such that a continuous flood/drainage path is maintained adjacent to the bund at all times.
 - Stockpiles of borrow material, excavated soil, gabion stones, and geotextile rolls shall be placed only at approved locations **at least 5 m away from the edge of the active flood/drainage path** and at least 10 m from the bund crest.
 - Stockpiles shall be covered with tarpaulins during forecast rainfall events.
 - No spoil, machinery, or temporary facility shall be placed within active flood or drainage paths.
2. **Pre-monsoon construction scheduling**
- All earthwork filling, compaction, and slope dressing shall be preferably scheduled during the **dry season (October to May)** to minimize exposure of incomplete sections to monsoon flood risk.
 - Where construction must continue during or near the monsoon season, only sections that can be protected with temporary slope cover (tarpaulin or geotextile) within a single working day shall be opened at any one time.
 - No embankment section shall be left exposed and unprotected overnight during the pre-monsoon (May–June) and monsoon (July–September) periods without approved protective measures in place.
3. **Upstream flow monitoring and early warning**
- The Contractor shall install simple staff gauges at upstream reference points along the FPB alignment to monitor approaching flood water levels, in coordination with the Irrigation Department field gauges where available.
 - A pre-defined trigger level shall be established (rising water level of **0.35 m above dry-season baseline** at the upstream gauge). When triggered:
 - All works within the bund footprint and toe area shall be suspended immediately.
 - Workers shall evacuate to pre-designated safe assembly points on high ground away from the bund alignment.
 - The Contractor shall notify the CSC and PIU within 30 minutes.
 - The Contractor shall maintain real-time coordination with the Pakistan Meteorological Department (PMD) for monsoon rainfall advisories. **Rainfall thresholds for work suspension: 15 mm in 1 hour or 25 mm in 24 hours** at the nearest PMD reference station.
4. **Slope protection before rainfall exposure**
- Immediately upon completion of each embankment layer (and before any forecast rainfall), the exposed slope face shall be:
 - Trimmed, dressed, and compacted to the approved specification.
 - Covered with UV-stabilized polypropylene geotextile (40 microns) as soon as the section reaches design grade.
 - Stone-pitched in accordance with the approved design thickness before the onset of any flow event.
 - Temporary drainage swales shall be cut at **50 m intervals** along the bund crest and berms to divert surface runoff away from exposed slope faces during construction.
 - Weekly inspection for slope slumping, cracks exceeding 2 cm, or geotextile displacement shall be conducted. Defects shall be repaired within 24 hours of identification.
5. **Toe protection priority sequencing**
- Given the critical role of gabion apron protection in preventing toe scour (design scour depth: 3.20 m), all toe excavation and gabion/apron installation works shall be prioritized and completed **section by section** before adjacent earthwork filling and slope dressing proceed.
 - No embankment section shall be handed over from earthworks to slope protection works until the gabion apron at that section's toe has achieved full structural integration (wire lacing, stone filling, and keying-in to specified depth).

- Pre-monsoon inspection by the CSC/PIU shall verify that all completed toe sections are fully protected and no open apron excavations remain.
- 6. Sediment and turbidity control**
- Temporary silt barriers or sediment traps shall be installed at the downstream boundary of all active earthwork areas, at locations where runoff may enter seasonal drainage paths.
 - Turbidity shall be monitored at a point **100 m downstream** of active earthwork areas during and immediately after rainfall events.
 - If turbidity exceeds **25 NTU above baseline** at the monitoring point, earthworks shall be suspended until controls (additional silt barriers, reduced work area, or temporary shutdown) are effective.
 - Borrow areas at approved sources (to be confirmed per Figure 3-5 Borrow Area Map) shall be operated with perimeter bunding and sediment traps to prevent uncontrolled runoff from borrow excavations entering adjacent flood or drainage paths.
- 7. Flood emergency communication**
- The Contractor shall establish a community alert protocol in coordination with the District Administration, PDMA Balochistan, and the Irrigation Department for notifying residents of Gandava Main City, Siddiq Muhallah, and Darga Town in advance of any anticipated flood risk event during construction.
 - Emergency contact numbers shall be displayed at all work sites and at the contractor's camp.

C. Residual Impact

With full implementation of the above measures, residual hydrological risks during construction are expected to be **low to medium** and manageable within the project's environmental and social management framework. The phased construction approach, pre-monsoon scheduling preference, priority toe protection sequencing, and real-time PMD weather coordination together provide a layered risk reduction strategy commensurate with the high hydrological exposure of the Gandava FPB site.

The Contractor shall maintain incident logs and report any flood-related damage: including structural damage to incomplete works, slope instability, drainage obstruction, or community impact: to the Construction Supervision Consultant (CSC) and PIU **within 24 hours of occurrence**. All reportable incidents shall be documented in the monthly ESMP monitoring report.

6.5.1.8 Vegetation and Tree Removal

The sub-project footprint includes agricultural land and scattered vegetation. No protected area, critical habitat or notified forest is located within the approved works footprint. The sample replantation plan is annexed as Annexure-V.

Impacts / Risks

Design Phase

- Poor planning of access routes, camps, stockpiles and borrow areas may cause unnecessary vegetation clearance.
- Lack of vegetation inventory may result in unrecorded tree or crop damage.

Construction Phase

- Limited removal of shrubs, grasses or scattered trees may occur within work areas, camps, access routes or stockpile locations.
- Dust deposition may affect nearby crops, trees and vegetation.
- Machinery movement may damage crops or vegetation outside the approved footprint.

Operation Phase

- No significant adverse ecological impact is anticipated.
- Replanted or restored areas may fail if not maintained.

Mitigation Measures

Design Phase

- Work areas, camps, access routes and stockpile locations shall be selected to avoid unnecessary tree cutting and crop disturbance.
- Any required tree removal shall be identified, recorded and approved before cutting.
- Existing access routes shall be used to the extent practicable.
- Plantation requirements shall be included in the ESMP and relevant contract documents.

Construction Phase

- Vegetation clearance shall be limited to the minimum area required for construction.
- Trees, crops and vegetation outside the approved work boundary shall be protected.
- Machinery movement shall be restricted to designated routes.
- Dust suppression shall be implemented near agricultural fields and vegetation.
- Any accidental crop or vegetation damage shall be recorded and addressed as per project procedures.
- Unavoidable tree loss shall be compensated through plantation at a minimum ratio of 1:5, or as required by the Forest Department/PIU.
- Locally suitable indigenous species shall be preferred for plantation.
- Planted saplings shall be watered and maintained until establishment.

Operation Phase

- Plantation survival shall be monitored.
- Failed saplings shall be replaced during the next suitable planting season.
- No additional vegetation clearance shall be carried out without approval.
- Restored surfaces shall be maintained to avoid erosion and re-disturbance.

6.5.2 Social Impacts

6.5.2.1 Labour and Working Conditions (ESS2)

Construction will involve skilled and unskilled labour for earthworks, compaction, stone pitching, geotextile placement, gabion/apron works, borrow material handling, transport and site restoration.

Impacts / Risks

Design / Pre-Construction Phase

- If labour, OHS, camp management and worker GRM requirements are not included in the contract, implementation may be weak.
- Lack of labour planning may increase avoidable labour influx.

Construction Phase

- Workers may be exposed to accidents involving excavation, machinery, compaction equipment, stone handling, vehicle movement and working near flood/drainage paths.

- Workers may be exposed to dust, noise, heat stress, manual handling injuries and poor camp conditions.
- Risks may arise from child labour, forced labour, unfair wages or lack of grievance redress if contractor controls are weak.

Operation Phase

- O&M workers may face safety risks during inspection, debris removal, erosion repair and emergency post-flood maintenance.

Mitigation Measures

Design / Pre-Construction Phase

- Contract documents shall include ESS2-compliant labour requirements, OHS obligations, worker Code of Conduct, prohibition of child and forced labour, worker GRM and camp management requirements.
- The Contractor shall prepare a site-specific OHS Plan and labour management arrangements before mobilization.
- Local labour shall be preferred where skills are available.

Construction Phase

- Task-specific PPE shall be provided to all workers, including safety helmets, gloves, safety boots, reflective vests, dust masks, eye protection, hearing protection and life/safety equipment where required.
- OHS induction and toolbox talks shall be conducted regularly.
- Work involving excavation, compaction, machinery movement, lifting and stone/gabion handling shall be supervised by competent personnel.
- First-aid kits, trained first-aiders and emergency transport arrangements shall be available at active work sites.
- Labour camps shall provide safe drinking water, sanitation, bathing facilities, drainage, waste collection and clean living conditions.
- Child labour, forced labour and bonded labour shall be strictly prohibited.
- Worker age verification and employment records shall be maintained.
- A worker GRM shall be established and communicated to all workers.
- OHS incidents, near misses, training records and inspection findings shall be documented and reported.

Operation Phase

- O&M staff shall use appropriate PPE during inspection, maintenance and emergency repair works.
- Maintenance activities shall follow safe work procedures, especially after flood events when embankment sections may be unstable.
- Any worker incidents during operation or maintenance shall be recorded and addressed.

6.5.2.2 Community Health and Safety (ESS4)

Nearby communities may be exposed to temporary safety risks due to earthworks, machinery movement, open excavations, haulage, stockpiles and temporary access restrictions.

Impacts / Risks

Design Phase

- If community access, safety and flood-risk considerations are not incorporated into planning, construction may create avoidable risks for pedestrians, livestock, motorcycles, tractors and local vehicles.
- Poorly designed drainage/flood-flow arrangements may increase localized flooding risk.

Construction Phase

- Community members may be exposed to accidents involving machinery, construction vehicles, open excavations, stockpiles and unstable slopes.
- Children may enter active work areas if access is not controlled.
- Dust, noise, traffic movement and temporary diversions may affect nearby communities.
- Temporary obstruction of drainage/flood paths may increase safety risks during rainfall.

Operation Phase

- The restored FPB is expected to improve community safety by reducing flood exposure.
- Residual risks may remain if the bund is damaged, eroded, overtopped, blocked or poorly maintained.

Mitigation Measures

Design Phase

- Community safety requirements shall be included in the design, construction sequencing and contract documents.
- Safe access routes, temporary crossings and emergency access arrangements shall be planned before construction.
- The design shall maintain drainage/flood-flow continuity and avoid diversion of floodwater toward settlements.

Construction Phase

- Active work zones shall be fenced, barricaded or demarcated according to risk level.
- Warning signs shall be installed at work fronts, access points, stockpiles, excavations and haul routes.
- Open excavations, pits and unstable slopes shall be barricaded and marked with reflective signs or lights where required.
- Unauthorized public access, particularly by children, shall be prevented.
- Communities shall be informed in advance about construction schedules, access restrictions and safety hazards.
- Emergency access shall be maintained at all times.
- Community safety grievances shall be recorded and resolved through the GRM.

Operation Phase

- The FPB shall be inspected regularly to identify damage, erosion, breaches, unsafe sections or blocked drainage paths.
- Any safety hazard along the bund, including unstable slopes, exposed gabions, erosion cuts or damaged access routes, shall be repaired promptly.

- Communities shall be encouraged to report safety concerns, blockages or flood damage through the GRM or local Irrigation Department channels.

6.5.2.3 Traffic and Construction Safety Management

Traffic and construction safety risks are expected due to movement of construction vehicles, transport of borrow material and stone, machinery operation and temporary diversions near settlements and access tracks. (Annexure-P)

Impacts / Risks

Design / Pre-Construction Phase

- Inadequate planning of haul routes and diversions may disrupt local traffic and community access.
- Lack of coordination with local authorities may increase accident risks.

Construction Phase

- Increased movement of trucks, tractors, loaders and other vehicles may cause congestion, dust and accident risks.
- Temporary diversions may affect access to houses, fields, grazing areas, mosques, schools, markets and health facilities.
- Poorly marked work zones may create risks during night-time or low visibility.
- Construction vehicles may damage local tracks or obstruct community movement.

Operation Phase

- Traffic-related risks are expected to reduce after construction.
- Minor risks may occur during periodic maintenance or emergency repair works.

Mitigation Measures

Design / Pre-Construction Phase

- The Contractor shall prepare a site-specific Traffic and Construction Safety Management Plan before mobilization.
- Haul routes, material delivery timing, temporary diversions, emergency access and traffic-control measures shall be agreed with CSC/PIU and local representatives.
- Traffic management requirements shall be included in the Contractor's method statement.

Construction Phase

- Trained traffic marshals/flag persons shall be deployed at active work fronts, haul road crossings and diversion points.
- Diversion routes shall be marked with signs, barricades, cones, reflectors and warning boards.
- Speed limits shall be enforced near settlements, schools, mosques, markets and work areas.
- Construction vehicles shall not block access routes, community tracks or flood/drainage paths.
- Night-time hazards shall be marked with reflective signs or warning lights.
- Drivers shall be trained on safe driving, speed control, community safety and route discipline.

- Advance notice shall be provided for temporary closures, diversions or high-risk activities.
- Emergency vehicle access shall be maintained at all times.

Operation Phase

- Temporary traffic signs, diversions and barriers shall be removed after construction.
- Any local access route damaged by construction traffic shall be restored.
- Maintenance works shall follow traffic-control measures similar to construction-stage requirements.

6.5.2.4 Land Acquisition, Temporary Access Restriction and ESS5 Risks

The works are expected to remain within the existing FPB alignment and approved temporary work areas. No permanent physical displacement is anticipated; however, temporary access or livelihood impacts may occur during construction.

Impacts / Risks

Design Phase

- If the construction footprint is not clearly defined, there may be risk of unintended use of private or productive land.
- Informal access routes, grazing paths and field approaches may be affected if not identified during planning.

Construction Phase

- Temporary restriction of access to fields, houses, grazing areas, shops or community facilities may occur.
- Informal users and vulnerable households may be disproportionately affected if alternative access is not provided.
- Temporary use of private land for camps, stockpiles, access routes or machinery parking may create disputes if not properly agreed.

Operation Phase

- No permanent access restriction is anticipated.
- Improved flood protection is expected to benefit adjoining land and settlements.

Mitigation Measures

Design Phase

- The construction footprint shall be clearly defined and limited to the existing FPB alignment and approved work areas.
- Access routes, informal crossings, grazing routes and field approaches shall be identified before construction.
- Permanent land acquisition shall be avoided. Any unavoidable land requirement shall be screened and managed in accordance with ESS5 and the project RPF.
- Voluntary land donation shall not be used where it may affect vulnerable persons, livelihoods, access, or where there is any risk of coercion.

Construction Phase

- Safe temporary access arrangements, including crossings, ramps, bypasses or alternative tracks, shall be provided before any existing access is restricted.
- Affected persons shall be informed at least 72 hours before any planned restriction.

- Temporary use of private land shall be based on documented agreement with landowners/users and approval of PIU/CSC.
- Vulnerable households shall receive priority assistance where access restriction affects livelihood, mobility or safety.
- Any unanticipated access or livelihood impact shall be recorded, assessed and addressed under ESS5/RPF principles.
- Access-related complaints shall be recorded and resolved through the GRM.

Operation Phase

- Temporary access arrangements shall be removed only after permanent or original access is restored.
- Temporarily used areas shall be restored to pre-construction condition.
- Any remaining access or land-use grievance shall be resolved before contractor demobilization.

6.5.2.5 Adverse Downstream / Adjacent-Area Failure Scenario Analysis

A. Statement of Risk

Despite the application of climate-resilient design standards: including crest width of 6.0 m, side slopes of 2H:1V, gabion apron protection (0.75 m thickness), scour protection to a design scour depth of 3.20 m (silt factor 4.75), and a minimum freeboard of 0.5 m above design flow depth under the SSP2-4.5 climate scenario: a residual risk remains for the Gandava Town Flood Protection Bund.

The FPB is designed to intercept, contain, and safely manage flash flood flows generated from a catchment area of **8,136 km²** (longest stream length: 220 m; catchment slope: 0.0103 m/m) draining through the Kachhi Plain toward Gandava Town. During an extreme rainfall event exceeding the design flood magnitude, or in the event of a sudden, intense cloudburst in the upstream hill torrent catchment, the restored FPB may experience one or more of the following adverse failure scenarios: **embankment overtopping, internal erosion and piping, crest settlement, toe scour and undermining, slope failure, or gabion apron displacement**, each of which could result in uncontrolled flood flows reaching adjacent settlements and agricultural land.

The project area lies within the highly flood-exposed Kachhi Plain. Sudden inflows from hill torrents can arrive with little warning (30–60 minutes) during the monsoon season (July to September). If the FPB is under construction: with incomplete embankment sections, unprotected slopes, or open toe excavations: the risk of structural failure and rapid inundation of low-lying settlements increases significantly. Even during the operation phase, inadequate maintenance of the stone pitching, geotextile, and gabion apron system may progressively reduce flood protection performance.

Based on the settlement baseline presented in Table 1-2 (Section 1.6) and Table 4-11 (Section 4.4.7), the following communities are identified as being at potential risk in a worst-case FPB breach or overtopping scenario due to their proximity to the bund alignment and lower elevation within the Kachhi Plain floodplain. Table 6-8 below summarizes the at-risk settlements, their distance from the FPB alignment, estimated population, 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 Settlements in FPB Overtopping/Breach Scenario (Gandava Town FPB)

Settlement	Distance from FPB Alignment	Estimated Population at Risk	Primary Risk Category
Gandava Main City	0.5 km	~1,050	Flood wave arrival / Rapid inundation
Darga Town	0.5 km	~245	Rapid inundation / Access loss
Siddiq Muhallah	1.0 km	~175	Flash flooding / Structural damage
Syed Farooq	2.0 km	~105	Agricultural land flooding / Waterlogging
Total		~1,575	

A detailed flood inundation map showing flood extent, arrival times, safe zones, and evacuation routes for each settlement shall be prepared by the Contractor and approved by the CSC and PIU prior to the start of earthworks.

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 FPB overtopping, structural failure, or breach. This includes climate-informed hydraulic and geotechnical design, monsoon season earthwork restrictions, priority toe protection sequencing, and phased slope stabilization before rainfall exposure.
- **Layer 2 (Early Warning):** Detection and alert systems to identify rising water levels in the upstream hill torrent catchment and at the FPB alignment, providing advance warning to at-risk communities.
- **Layer 3 (Emergency Response):** Preparedness and evacuation measures to enable communities to respond effectively if FPB overtopping or breach occurs during construction or operation.

C. Specific Mitigation Measures

The Contractor, under the supervision of the Construction Supervision Consultant (CSC) and the Project Implementation Unit (PIU), shall implement the following measures.

1. Restriction of Major Earthworks during Monsoon Season

No earthwork filling, compaction, or placement of unprotected embankment fill shall be carried out on the FPB 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 sudden hill torrent flows from the 8,136 km² catchment, and incomplete or unprotected embankment sections are acutely vulnerable to slope erosion, overtopping, and toe scour during flow events. A continuous natural flood/drainage path must be maintained adjacent to the FPB footprint at all times during construction.

Construction during the monsoon period shall be limited to off-bund works such as gabion wire fabrication, geotextile material storage, contractor camp maintenance, quality documentation, and dry-area finishing works. The Contractor is responsible for incorporating the monsoon shutdown period into the main construction schedule; the CSC is 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 along the FPB corridor as specified in Table 6-9 below.

Table 6-9: Water Level Gauge Locations and Specifications

Gauge Designation	Location	Purpose	Monitoring Responsibility
Gauge 1 (Upstream Trigger)	At the upstream entry point of the principal hill torrent channel feeding the FPB alignment catchment	Detect rising flows entering the FPB flood corridor from hill catchments	CSC Safety Officer
Gauge 2 (Toe Monitor)	At the downstream/landside toe of the FPB at the most vulnerable (lowest crest elevation) section	Monitor water levels at the bund face during active flow events; detect overtopping or toe saturation	CSC Safety Officer

Pre-defined trigger levels shall be established in coordination with the Irrigation Department and the Pakistan Meteorological Department (PMD), based on the design flood depth and freeboard provisions of the FPB. Table 6-10 below defines the trigger levels and corresponding required actions.

Table 6-10: Trigger Levels and Required Emergency Actions

Trigger Level	Water Level / Rainfall Condition	Required Actions
Alert Level	Water level at Gauge 1 rises 0.35 m above dry-season baseline OR PMD issues monsoon advisory for District Jhal Magsi	CSC and Contractor notified; site inspections increased to twice daily; Contractor verifies all slope protection is in place; community mobilisers placed on standby
Evacuation Trigger Level	Water level reaches 75% of design crest height at Gauge 2 AND rainfall exceeds 15 mm in 1 hour or 25 mm in 24 hours	All earthworks and on-bund activities halted immediately; workers evacuated to pre-designated safe assembly points; CSC notifies PIU and District Emergency Officer, Jhal Magsi; Emergency Action Plan activated; community alert systems deployed

The CSC Safety Officer shall monitor water levels **daily during the monsoon season** and immediately upon any PMD flood warning issued for Districts Jhal Magsi or Naseerabad. The Contractor is responsible for installing, calibrating, and maintaining the gauges. The CSC shall verify gauge functionality weekly during the monsoon season.

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 the start of any earthworks**. This EAP shall be appended to the Contingency and Emergency Response Plan (Annexure R). Table 6-11 below specifies the required components.

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

Component	Description	Responsible Party
Inundation Mapping	Simple map-based flood inundation model for the worst-case FPB breach or overtopping scenario (flood	Contractor to prepare; CSC to approve

Component	Description	Responsible Party
	flow exceeding 150% of design capacity at the lowest bund section), showing flood extent, estimated arrival times for each at-risk settlement, identified safe zones (high ground above 3.20 m design scour level), and primary and secondary evacuation routes	
Community Alert System	Two manually operated sirens or loudspeakers installed at critical locations: one at the upstream hill torrent entry point (near Gauge 1) and one near the Gandava Main City boundary (0.5 km from the FPB). A roster of two community mobilisers per at-risk settlement trained to receive alerts and warn residents via pre-agreed signals (drum beating, mosque loudspeaker announcements)	Contractor to install; PIU to coordinate with Union Councils, Jhal Magsi
Alert Protocol	One-page protocol in Urdu and Balochi stating: <i>"If you hear the continuous siren for two minutes OR receive a verbal warning from the Community Mobiliser, move your family and livestock to the pre-identified safe zone immediately. Do not enter the flood bund area. Help children, elderly, and persons with disabilities first."</i> To be distributed to all households in Gandava Main City, Darga Town, Siddiq Muhallah, and Syed Farooq	Contractor to prepare and distribute; PIU to verify community receipt
Evacuation Drill	Full-scale emergency evacuation drill conducted before the first monsoon season following contractor mobilization, involving representatives from all four at-risk settlements, the District PDMA Officer of Jhal Magsi, and the Contractor emergency response team	Contractor to conduct; CSC to verify; PIU to coordinate with District Administration, Jhal Magsi

A drill report shall be submitted to the PIU and the World Bank. The Contractor is responsible for preparing the EAP and conducting the drills. The CSC shall verify community training and drill outcomes.

D. Residual Risk

Following full implementation of the preventive measures (Layer 1), early warning measures (Layer 2), and emergency response measures (Layer 3) described above, the residual risk to adjacent communities from an FPB overtopping or breach event is reduced from **High** to **Low-Medium**. Table 6-12 below summarizes the risk reduction achieved through each mitigation layer.

Table 6-12: Residual Risk Assessment after Mitigation

Risk Layer	Mitigation Measure	Risk Reduction Achieved
Preventive	Climate-informed hydraulic and geotechnical design (crest 6.0 m, slopes 2H:1V, scour protection 3.20 m, SSP2-4.5 scenario)	High
Preventive	Monsoon earthwork restriction (July 15–September 15)	Medium
Preventive	Priority toe protection sequencing and pre-rainfall slope covering	High
Early Warning	Staff gauges with pre-defined trigger levels (0.35 m upstream rise; 75% design crest height at toe)	High
Early Warning	Daily CSC monitoring during monsoon season and PMD coordination	Medium

Risk Layer	Mitigation Measure	Risk Reduction Achieved
Emergency Response	Inundation mapping and evacuation route identification for four settlements	High
Emergency Response	Community alert system (sirens + mobilisers) 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 rehabilitation project of this nature, provided that the Early Warning System and Emergency Action Plan remain functional, are tested annually before each monsoon season, and the stone pitching, geotextile, and gabion apron system is maintained in accordance with the Operation and Maintenance Plan.

E. Monitoring and Reporting

The CSC shall include a dedicated section in the **Monthly ESMP Compliance Report** on the status of the Early Warning System, covering battery and power checks, siren function tests, gauge calibration readings, and community mobiliser roster verification. Any activation of the Alert Level or Evacuation Trigger Level shall be reported to the PIU and World Bank **within 24 hours**. The annual evacuation drill report shall be submitted to the World Bank as part of the Project Annual E&S Progress Report. Table 6-13 below summarizes all monitoring and reporting requirements for this section.

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

Monitoring Activity	Frequency	Responsible Party	Reporting Requirement
Early Warning System status check (power, siren, gauge calibration, mobiliser roster)	Weekly during monsoon season; monthly otherwise	CSC Safety Officer	Included in Monthly ESMP Compliance Report
Slope protection, geotextile, and gabion apron inspection	Weekly during monsoon season; fortnightly during construction	CSC Environmental Officer	Included in Monthly ESMP Compliance Report
Alert Level or Evacuation Trigger Level activation	As occurs	CSC Safety Officer	Report to PIU and World Bank within 24 hours
Emergency evacuation drill	Annually before monsoon season	Contractor with CSC verification	Drill report submitted to PIU and World Bank as part of Annual E&S Progress Report
FPB structural condition (crest, slopes, toe, gabions, pitching) post-flood inspection	Within 48 hours of any significant flow event	CSC Civil/Structural Engineer	Submitted to PIU; defects repaired within 7 days

6.5.2.6 Water Rights, Drainage Rights, and User Conflicts

A. Risk Assessment

The rehabilitation of the Gandava Town Flood Protection Bund restores the original flood containment and drainage protection capacity of the existing bund and does not alter natural flood flow paths, drainage command areas, or irrigation water rights. Therefore, no new or permanent water rights conflicts between farmers, communities, or other water users are anticipated as a result of the proposed works.

However, temporary construction activities: including earthwork filling and compaction, toe excavation for gabion apron installation, stockpiling of borrow material and gabion stones, and placement of construction machinery within the FPB footprint and adjacent areas: may cause localized disruptions to natural drainage and flood-flow paths adjacent to the bund alignment. If not properly managed, these disruptions could lead to disputes between communities and landowners whose fields, drainage channels, or seasonal water courses are affected by construction-related obstruction, ponding, or diversion of flows. Additionally, farmers and communities that have historically relied on the flood protection bund for protection of their agricultural land may raise concerns if construction activities reduce the protective function of the bund: even temporarily. Table 6-14 below summarizes the potential temporary impacts on water and drainage users during construction.

Table 6-14: Temporary Construction Impacts on Water and Drainage Users (Gandava Town FPB)

Activity	Impact	Duration	Affected Users
Earthwork filling, compaction, and slope dressing within bund footprint	Temporary narrowing or obstruction of drainage paths adjacent to FPB; possible localized ponding landside of bund	3–7 days per bund section	Farmers with fields draining toward or through the FPB influence area
Toe excavation for gabion apron installation	Localized temporary diversion of shallow sub-surface and surface flows at bund toe; sediment suspension in adjacent drainage paths	2–5 days per section	Landowners and farmers adjacent to FPB toe
Stockpiling of borrow material, gabion stones, and excavated spoil	Obstruction of drainage paths and seasonal water courses if stockpiles are placed in or adjacent to flow paths	Duration of stockpile placement (typically 3–10 days)	Landowners adjacent to stockpile areas; downstream drainage users
Construction camp, machinery yard, and access road establishment	Possible obstruction or compaction of seasonal drainage paths; increased surface runoff toward adjacent fields	Duration of mobilization phase (2–4 weeks)	Adjacent farmers and community members

B. Mitigation Measures

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

1. Advance Notice to Affected Water and Drainage Users

- For planned activities that will obstruct, divert, or temporarily reduce drainage capacity adjacent to the FPB: The Contractor shall provide a minimum of **7 calendar days written notice** posted at village mosques, Union Council offices, and public gathering

places in all affected settlements (Gandava Main City, Darga Town, Siddiq Muhallah, and Syed Farooq). The notice shall be in **Urdu and Balochi** and shall include:

- Location and nature of the construction activity.
- Expected duration of any drainage obstruction or flow diversion.
- Measures being taken to maintain drainage continuity.
- Contact information of the Contractor's Community Liaison Officer.
- Grievance submission channels (GRM focal point, PIU contact).
- For activities causing turbidity increase or minor localized drainage reduction without complete obstruction: The Contractor shall provide a minimum of **3 calendar days verbal notice** through the Community Liaison Officer, who shall inform village elders and farmers' representatives directly.

2. Maintenance of Natural Drainage and Flood-Flow Paths

- No stockpile of borrow material, excavated spoil, gabion stone, construction equipment, or temporary facility shall be placed in or across any natural drainage path, seasonal water course, or field drainage channel adjacent to the FPB alignment.
- All stockpiles shall be located **at least 5 m from the nearest drainage path or field boundary**, on ground that does not intercept surface runoff.
- Where construction access tracks must cross drainage paths, the Contractor shall install temporary culverts or bridging of adequate capacity before commencing works and shall remove these on completion of works, restoring the drainage path to its original cross-section.
- Drainage continuity shall be maintained throughout all construction phases; any obstruction shall be temporary, notified in advance, and limited to a maximum of **8 hours at a time** without an approved bypass arrangement.

3. Grievance Redress Mechanism (GRM) Prioritization

All water and drainage-related complaints shall be treated as high priority in the Project's Grievance Redress Mechanism (see Section 7.4):

- **Acknowledgment:** Complaints shall be acknowledged within **24 hours** of receipt.
- **Routine resolution:** Turbidity, minor flow reduction, or temporary drainage obstruction complaints shall be resolved within **3 working days**.
- **Emergency complaints:** Unnotified obstruction of a drainage path or water course causing crop inundation or waterlogging shall be classified as an emergency complaint, acknowledged within **2 hours**, and resolved within **12 hours**, including physical removal of the obstruction where required.

4. Construction Timing Restrictions

No activity that will obstruct adjacent drainage paths or seasonal water courses for more than 8 hours shall be scheduled during peak irrigation and crop periods without prior approval from the PIU. Peak periods in the Jhal Magsi agricultural calendar are defined as:

- **May to June** (Kharif crop sowing and early growth: irrigation drainage demand is highest)
- **August to October** (Kharif crop maturation and Rabi crop sowing: field drainage critical)

Activities causing drainage obstruction during these periods shall be scheduled to minimize disruption and shall not exceed **8 hours per day**.

5. Water and Drainage Coordination Committee

A Water and Drainage Coordination Committee shall be established prior to the start of any construction activity that may affect adjacent drainage paths or community water use. The Committee shall comprise:

Member	Role
SDO Irrigation, Jhal Magsi	Chairperson
Contractor's Project Manager	Member
CSC Environmental / Social Officer	Member
Two farmer representatives (one from Gandava Main City; one from Syed Farooq / downstream area)	Members
Community Liaison Officer	Secretary

The Committee shall:

- Meet before construction begins to review the construction schedule and any planned drainage path obstructions or diversions.
- Meet whenever a drainage obstruction exceeding 8 hours is proposed, to review and approve timing and mitigation measures.
- Receive and review water and drainage-related grievances escalated through the GRM.
- Recommend corrective actions to the Contractor where necessary.

6. Temporary Drainage Flow Management Measures

During planned activities that temporarily obstruct or divert drainage paths, the Contractor shall:

- Install temporary bypass channels, pipes, or pumps to maintain minimum flow continuity where technically feasible.
- Provide written notification to affected farmers of the expected duration and nature of any drainage obstruction.
- Install silt barriers or temporary settling basins at the downstream boundary of active earthwork zones to reduce turbidity and sediment entry into adjacent drainage paths.
- Reinstatement all affected drainage paths to their original cross-section and condition immediately upon completion of the relevant construction activity, before moving to the next section.

C. Residual Risk

Following full implementation of the above measures, the residual risk of water and drainage-related conflicts is assessed as **Low**. No significant adverse impacts on drainage rights or permanent disputes between user groups are anticipated. The restoration of the Gandava Town FPB will, in its operational phase, provide substantially improved flood protection for all four adjacent settlements and their associated agricultural lands: a net positive outcome for all current and downstream drainage and water users in the project influence area. The Water and Drainage Coordination Committee and the prioritized GRM shall remain operational throughout the construction period to address any unanticipated issues promptly.

6.5.2.7 Community Access and Informal Crossing Management

Local communities use the Gandava FPB corridor and adjacent floodplain for access to houses, fields, grazing areas, mosques, schools, markets, health facilities and local tracks.

Impacts / Risks

Design Phase

- If existing formal and informal access routes are not mapped, the construction plan may disrupt community movement.
- The design may unintentionally restrict access to fields, grazing areas or local services.

Construction Phase

- Embankment strengthening, excavation, stone pitching, gabion works, material stockpiles and machinery movement may temporarily interrupt footpaths, motorcycle tracks, tractor routes, field approaches and informal crossings.
- Unsafe temporary crossings may create accident risks.
- Lack of communication may lead to community dissatisfaction or conflict.

Operation Phase

- The restored bund may improve overall flood safety but may also affect informal crossings if access points are not maintained.
- Uncontrolled crossing over vulnerable bund sections may damage the embankment.

Mitigation Measures

Design Phase

- Existing formal and informal access routes/crossings shall be mapped in consultation with community representatives.
- The design shall maintain practical access points where feasible without compromising bund safety.
- Construction sequencing shall ensure that at least one safe alternative access route remains available where practicable.

Construction Phase

- No crossing or local route shall be closed until a safe temporary crossing, ramp, bypass or alternative route is provided and communicated.
- Advance notice shall be provided at least 72 hours before any planned access restriction.
- Signage and flag persons shall be provided at active work fronts where construction traffic interacts with community movement.
- Emergency access for ambulances, local administration, Irrigation Department staff and communities shall be maintained at all times.
- Access-related complaints shall be recorded and resolved through the GRM.

Operation Phase

- Permanent access arrangements shall be restored before demobilization.
- Access points shall be maintained in a manner that does not weaken bund stability.
- Any erosion or damage caused by informal crossing use shall be repaired and, where required, safer access arrangements shall be provided in consultation with communities.

6.5.2.8 Labour Influx and Social Conflict

The sub-project may require a limited number of non-local skilled workers in addition to local labour. If unmanaged, labour influx may create social tension or pressure on local resources. (Annexure-N)

Impacts / Risks

Design / Pre-Construction Phase

- Lack of labour planning may increase unnecessary labour influx.
- Inadequate camp siting and camp facilities may create sanitation, waste and social nuisance issues.

Construction Phase

- Worker-community conflicts may occur due to behaviour, cultural differences, competition for employment or use of local resources.
- Labour camps may create waste, sanitation, security or nuisance concerns if poorly managed.
- Non-local workers may unintentionally disrespect local customs if not properly oriented.

Operation Phase

- Labour influx impacts are expected to cease after construction and demobilization.

Mitigation Measures

Design / Pre-Construction Phase

- Local labour shall be preferred where skills are available.
- Labour camp requirements, worker conduct obligations and community liaison arrangements shall be included in the Contractor's plans.
- The Contractor shall appoint a Community Liaison Officer/focal person before mobilization.

Construction Phase

- All workers shall sign and comply with a Worker Code of Conduct.
- Worker induction shall cover local customs, community relations, respectful behaviour, GBV/SEA/SH prevention, grievance channels and disciplinary consequences.
- Camps shall be provided with adequate water, sanitation, drainage, waste management and security.
- Worker movement shall be managed to avoid nuisance to nearby communities.
- The Contractor shall hold regular coordination meetings with community representatives.
- Community grievances related to worker behaviour shall be recorded and resolved through the GRM.

Operation Phase

- Labour camps shall be dismantled and sites restored.
- Camp waste, temporary structures and contaminated material shall be removed.
- Any pending labour/community grievance shall be resolved before contractor demobilization.

6.5.2.9 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 labor 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 behaviors, 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 behavior, 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 6-7: 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.¹ 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.

Activity	Impact	Duration	Affected Users
Rehabilitation and re-sectioning of flood protection bund (earthwork, crest and slope strengthening)	Temporary earthwork disturbance, dust generation, noise, and localized access restriction along bund alignment	30 to 60 days	Local residents, farmers, and communities within and around Ghandhawa Town
Stone pitching and gabion works	Temporary excavation, movement of heavy materials, and localized safety risks near work areas	20 to 40 days	Adjacent landowners, and nearby settlements

Activity	Impact	Duration	Affected Users
Turfing and protection works on landward slope	Minor surface disturbance and temporary restriction of movement along bund crest and slope	10 to 20 days	Local residents and land users adjacent to bund
Transport and placement of construction materials (earth, stone, gabions)	Temporary traffic disturbance, dust emissions, and safety risks due to vehicle movement	Entire construction period	Local road users, farmers, and nearby communities
Movement of machinery and equipment along bund alignment	Noise, dust, and temporary obstruction of access routes	Entire construction period	Local residents and workers in nearby areas
Temporary stockpiling of earth and stone material	Localized land occupation, dust generation, and temporary visual obstruction	3 to 10 days per stockpile location	Adjacent landowners and nearby users
Temporary diversion or restriction of local access along bund section (if required)	Short-term restriction of movement and access along bund crest or nearby paths	1 to 5 days (as required)	Local residents, farmers, and pedestrians

6.5.2.10 Cultural and Community Impacts

Construction activities for the restoration of the Gandava Town Flood Protection Bund may temporarily disrupt local routines, cultural practices, and community access patterns in the four adjacent settlements.

Impacts / Risks

Temporary disturbance to daily life and social norms.

With respect to community access and informal crossings, the Gandava Town FPB is an **earthen flood protection bund**: not a water-filled drain channel: and community members in Gandava Main City, Darga Town, Siddiq Muhallah, and Syed Farooq have historically used informal pathways, footpaths, and livestock tracks that cross or run alongside the bund alignment for daily movement between settlements, agricultural fields, grazing areas, mosques, schools, and markets. Unlike a permanently flowing drain, the FPB bund crest and slopes are accessible on foot and by livestock under normal (non-flood) conditions, meaning that construction works directly on and around the bund will temporarily obstruct these informal crossing points and movement routes.

The proposed earthwork filling, compaction, slope dressing, geotextile laying, stone pitching, and gabion apron installation will be carried out across the full bund alignment (left and right side). These activities will temporarily restrict or close informal bund-top crossings and access tracks for the duration of active works at each section. Communities adjacent to the works: particularly Gandava Main City (0.5 km) and Darga Town (0.5 km): are most likely to experience disruption to daily movement and access patterns.

Community cultural properties identified in the project area (Table 4-18): including mosques, shrines, and community gathering points near the settlements: shall be noted in the pre-construction access mapping exercise, and construction activities shall not obstruct community access to these facilities at any time.

Gender-based violence (GBV) risks associated with labor influx are addressed in accordance with the World Bank Good Practice Note on GBV (refer to GBV provisions in Annexure A: Code of Conduct, Annexure J: Gender Action Plan, and Annexure N: Labor Influx Plan).

Mitigation Measures

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

1. Pre-Construction Informal Crossing and Access Mapping

Prior to the commencement of any construction activity, the Contractor: in coordination with the CSC, PIU, and community representatives from Gandava Main City, Darga Town, Siddiq Muhallah, and Syed Farooq: shall conduct a **walkover survey of the full FPB alignment** to identify and map all informal crossing points, footpaths, livestock tracks, and community movement routes that currently use or cross the bund alignment or its immediate vicinity. This map shall be included in the site-specific Contractor's ESMP (C-ESMP) and provided to the Community Liaison Officer for reference throughout construction.

For every informal crossing or access route identified, the Contractor shall either:

- Maintain the crossing point operational by restricting active works at that location to a maximum section length that allows safe community passage to be maintained at an alternative nearby point; or
- Provide a clearly marked, safe **temporary alternative crossing or access route** prior to closing the existing route, after consultation with the community members who use it.

No informal crossing point shall be closed without a functional temporary alternative being in place and communicated to the community **at least 72 hours in advance**.

2. Advance Notice of Access Disruptions

- The Contractor shall provide **72 hours advance written and verbal notice** to affected communities before any construction activity that will restrict or close an informal crossing or access route along the FPB alignment.
- Notice shall be posted at mosques, community gathering points, and village entry points in Gandava Main City, Darga Town, Siddiq Muhallah, and Syed Farooq, in **Urdu and Balochi**.
- The notice shall state the location, duration, and nature of the restriction, the temporary alternative route provided, and the contact details of the Community Liaison Officer and GRM focal point.

3. Emergency Access Maintenance

Emergency vehicle access (ambulances, fire response, PDMA evacuation) along the FPB alignment and to all four adjacent settlements shall be maintained at all times throughout construction. No construction activity shall fully block both sides of the bund simultaneously. A minimum passable emergency access route of 3.5 m width shall be maintained on the landside of the bund at all times.

4. Scheduling of Works to Avoid Sensitive Times

Construction activities shall be scheduled to avoid sensitive periods, including:

- Friday congregational prayers and religious events (Jumu'ah, Eid, Ramadan night prayers)

- Local cultural ceremonies, weddings, and community gatherings
- Weekly market days in Gandava Town
- Harvest seasons (Kharif: October–November; Rabi: March–April) when farmer movement to and from fields is most frequent

Where avoidance is not possible, advance notice shall be provided to affected communities and work hours shall be adjusted to minimize disruption to daily movement and cultural routines.

5. Conduct of Community Consultations

The Contractor, in coordination with the PIU 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, access restrictions, and temporary disruptions, and shall provide opportunities for community members: including women, elderly persons, and persons with disabilities: to raise concerns and suggest mitigation measures. Feedback from consultations shall be documented and incorporated into construction planning where feasible. Consultation records shall be maintained and reported to the CSC in the Monthly ESMP Compliance Report.

6. Respect for Local Customs and Traditions

All project workers shall be required to respect local customs, traditions, and social norms of the Baloch/Brahvi communities in Jhal Magsi District. Cultural awareness shall be included in mandatory worker induction training, emphasizing appropriate behavior, dress codes, interaction with community members: particularly women: and respect for religious and cultural sites identified in Table 4-18. Any culturally sensitive issues raised by the community shall be addressed promptly through the Community Liaison Officer or GRM within 24 hours of receipt.

7. Monitoring and Adaptive Management

The effectiveness of social disturbance and community access mitigation measures shall be monitored through community feedback surveys, consultations, and the GRM. The number and nature of community access complaints received through the GRM shall be tracked and reported monthly. Construction practices shall be adjusted as needed to address concerns and minimize social disruption.

Residual Impacts

With full implementation of the above mitigation measures: particularly the pre-construction access mapping, provision of temporary alternative crossings, and 72-hour advance notice protocol: residual impacts on community access and cultural life are expected to be **low, localized, temporary, and fully reversible** within the construction period. The subproject will deliver long-term benefits in flood protection, agricultural productivity, and community resilience for an estimated 1,575 persons across the four adjacent settlements, substantially outweighing the temporary construction-phase disruptions managed under this section.

6.5.2.11 Cultural, Community and Chance-Find Impacts

No known archaeological or cultural heritage site has been identified within the proposed Gandava Town FPB works area. However, chance finds may occur during excavation or earthworks.

Impacts / Risks

Design Phase

- Failure to include chance-find procedures in contract documents may delay appropriate response if cultural material is discovered.
- Lack of planning around community events may cause avoidable social disturbance.

Construction Phase

- Excavation may accidentally expose archaeological, historical, religious or cultural material.
- Construction activities may temporarily disturb daily routines, prayer times, religious events, market days or community gatherings.
- Worker behaviour may create cultural sensitivity concerns if not managed.

Operation Phase

- No significant cultural heritage impact is anticipated during operation.
- Chance finds may occur only during future maintenance excavation, if any.

Mitigation Measures

Design Phase

- Chance-find procedures shall be included in contract documents.
- Worker induction shall include instructions on identifying and reporting chance finds.
- Construction scheduling shall consider local religious, social and cultural events to the extent practicable.

Construction Phase

- If any archaeological or cultural material is discovered, work at the location shall stop immediately.
- The Contractor shall secure the area and inform CSC/PIU without delay.
- The Contractor shall submit a brief report with photographs, location and description of the find.
- Work shall resume only after clearance from the competent authority/PIU/CSC.
- Construction activities shall be scheduled to avoid sensitive times, including prayers, religious events, market days and community gatherings where practicable.
- Workers shall respect local customs, traditions, dress norms and community practices.
- Cultural or community concerns shall be addressed through the Community Liaison Officer and GRM.

Operation Phase

- No routine mitigation is required.
- If any chance find occurs during maintenance excavation, the same chance-find procedure shall be followed.

6.5.2.12 Physical Resettlement

The proposed Gandava Town Flood Protection Bund works will be implemented along the existing alignment and approved work areas.

Impacts / Risks

Design Phase

- If the footprint is expanded without screening, there may be risk of affecting structures or community assets.
- Lack of clearly marked work limits may create unintended encroachment beyond the approved area.

Construction Phase

- No physical displacement is anticipated.
- Temporary disturbance may occur near access routes or work areas, but no relocation of households or businesses is expected.

Operation Phase

- No physical resettlement impact is anticipated during operation.

Mitigation Measures

Design Phase

- Work boundaries shall be clearly defined in drawings and at site.
- Any proposed design change or expanded footprint shall be screened for resettlement impacts before approval.
- Residential and commercial structures shall be avoided.

Construction Phase

- Construction shall remain within the approved alignment and temporary work areas.
- If any unanticipated structure impact is identified, work in that area shall stop and PIU/CSC shall assess the issue under ESS5/RPF requirements before proceeding.
- No demolition or displacement shall occur without due process, consultation and approved mitigation.

Operation Phase

- No mitigation is required beyond maintaining the FPB within the approved footprint.
- Any post-construction community concern related to access or structure safety shall be addressed through the GRM/O&M mechanism.

6.5.2.13 Permanent Land Acquisition

No permanent land acquisition is anticipated at this stage, as the works are expected to be carried out along the existing FPB alignment and approved temporary work areas.

Impacts / Risks

Design Phase

- Design changes or expanded work areas may create unforeseen land requirements.
- Inappropriate reliance on informal land arrangements may create disputes.

Construction Phase

- Temporary use of land may be required for camps, stockpiles, access routes, machinery parking or borrow-related activities.
- Private or productive land may be affected if temporary land use is not properly agreed and restored.

Operation Phase

- No permanent land acquisition or land-use restriction is anticipated after completion.

Mitigation Measures

Design Phase

- The design shall avoid permanent land acquisition and private land use to the maximum extent practicable.
- Any unavoidable land requirement shall be screened and managed in accordance with ESS5 and the project RPF.
- Voluntary land donation shall be avoided to the maximum extent possible and shall not be used where there is livelihood impact, vulnerability, coercion or dispute.

Construction Phase

- Temporary land use shall be based on documented agreement with the landowner/user and approval by PIU/CSC.
- Temporary use areas shall be restored after completion.
- No private land shall be used without prior agreement.
- Any unanticipated land impact shall be recorded, assessed and resolved before works proceed in the affected area.

Operation Phase

- Temporarily used land shall be handed back in restored condition.
- Any remaining land-related grievance shall be resolved through the GRM before contractor demobilization.

6.5.2.14 Residual Impacts and Enhancement Benefits

Residual Impacts

Design Phase

- Residual design-stage risks will remain low if final design incorporates appropriate crest levels, freeboard, slope protection, toe protection, drainage continuity, access management and climate resilience measures.

Construction Phase

- Residual construction-stage impacts may include short-term dust, noise, traffic disruption, temporary access restriction, sediment movement, worker/community safety risks and localized inconvenience.
- These impacts are expected to be temporary, localized, reversible and manageable with full implementation of the ESMP.

Operation Phase

- Residual operation-stage risks may include localized erosion, settlement, toe scour, blocked drainage paths or damage to stone pitching/gabions if maintenance is inadequate.
- With regular inspection and maintenance, residual risks are expected to remain low.

Enhancement Benefits

- Restoration of the Gandava Town FPB will improve flood protection for nearby settlements, agricultural land and local infrastructure.
- The sub-project will reduce future flood-related damage and improve climate resilience.
- Local communities will benefit from improved safety, reduced flood exposure and enhanced protection of livelihoods.

- Temporary employment opportunities will be generated during construction.
- Improved flood protection and drainage continuity will contribute to community resilience and socio-economic stability in the project area.

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 restoration of right and left side flood protection bund under the Subproject. 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 redress 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's Environmental and Social Management Framework (ESMF), site-specific management instruments, and relevant international standards, including the World Bank Environmental and Social Framework (ESF). Through effective implementation and supervision, the ESMP supports improved drainage performance by minimizing adverse environmental and social impacts, protecting workers and local communities, and enhancing the long-term sustainability and climate resilience of the drainage system.

7.1 INSTITUTIONAL ARRANGEMENTS FOR E&S IMPLEMENTATION

The Sub-project 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 Sub-project 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 Sub-project 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 and GRM procedures and use this as a monitoring tool for ESMP implementation.

Serious Incident Notification:

If the PIU/FPMU becomes aware of a serious incident associated with the Sub-project 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).

Completion and Site Restoration:

At Sub-project 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.

GRM will work at different levels as Workers GRM, Community level GRM and their committees at local level for both Male and Female Community members and then for any other like institutional stakeholders or any one including civil society etc. Mechanism is established and is shared with the community and civil society and will be shared with the workers as well.

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 Sub-project 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 (Sub-project 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-centred 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 office of the Deputy Commissioners Jhal Magsi district.

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, CSC, DC Jhal Magsi 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, PCC, through the CSC, 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 PCC 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. CSC 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 Social safeguard Specialist, 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 CSC and Contractor. The PCC will, as necessary, through CSC instruct the Contractor to take corrective actions. The PCC will review the Contractor's response and undertake additional monitoring. During the complaint investigation, the PCC will work in close consultation with the Contractors, and the Supervising Engineer (during construction), and the PIU representatives (during operation). The contractors during construction and the CSC 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 CSC 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: Quantitative Monitoring Indicators for Gandava Town FPB

Indicator / Risk Area	Baseline	Target / Compliance Standard	Unit	Frequency	Responsibility
FPB restoration and protection works	Existing damaged/eroded Gandava Town left/right-side flood protection bund requiring restoration	100% works completed as per approved design; 100% post-construction inspection and defect list closure before handover	% and No.	Monthly and at completion	Contractor / CSC / PIU
Downstream flood / embankment failure risk	Flood-prone FPB alignment with seasonal flow exposure and damaged sections	0 unaddressed overtopping, breach, piping, toe-scour, blocked drainage path or slope-protection defect; inspection report within 24 hours after significant rainfall/high-flow event	No. of observations; hours	Weekly during construction; pre-monsoon; after rainfall/high-flow events	Contractor / CSC / PIU
Hydraulic continuity and drainage/flood paths	Existing natural/seasonal drainage paths around FPB corridor	100% active drainage/flood paths kept functional or provided with approved temporary diversion; no unauthorized obstruction/stockpile in flow path	% paths maintained; No. of obstructions	Daily during active works and after rainfall	Contractor / CSC
Borrow material sourcing and rehabilitation	Borrow material required for embankment and protection works	100% borrow sources approved by CSC/PIU; 100% used borrow areas re-graded/drainage/stabilized after use	% approved/restored	Weekly and at closure of each borrow source	Contractor / CSC
Sediment/spoil testing and reuse/disposal	No pre-construction contamination data for suspect sediment/spoil stockpiles	100% suspect sediment/spoil stockpiles visually screened; 100% suspect material tested before reuse/disposal; 0 disposal in flood/drainage paths	No. and %	Before reuse/disposal; each suspect source/stockpile	Contractor / CSC / PIU
Ambient air and dust	Baseline PM10 84.88 µg/m³ and PM2.5 26.77 µg/m³ recorded in ESMP	PM10 and PM2.5 within NEQS/BEQS limits; visible dust controlled; water-sprinkling log maintained	µg/m³; No. of complaints	Monthly and upon complaint/dry windy conditions	Contractor / CSC
Noise	Baseline daytime noise approximately 35–40 dB(A) recorded in ESMP	Noise within applicable day-time limits; no unresolved noise complaint; high-noise works limited to daytime	dB(A); No. complaints	Monthly and upon complaint	Contractor / CSC
Fuel, oil and spill management	No spill baseline; fuel/oil to be used during construction	0 uncontained spills; spill response initiated immediately and closed within 24 hours; spill kits available at 100% fuel/maintenance areas	No.; hours; %	Daily inspection; monthly reporting	Contractor / CSC

Indicator / Risk Area	Baseline	Target / Compliance Standard	Unit	Frequency	Responsibility
Occupational health and safety	No active construction at baseline	≥95% PPE compliance during site inspections; 0 fatality; serious incidents reported to CSC/PIU within 24 hours	%; No.; hours	Daily toolbox/inspection; monthly reporting	Contractor / CSC / PIU
Community health, safety and traffic	Nearby settlements/access routes within 0.5–2 km of sub-project area	100% active work fronts barricaded/signposted; speed limits applied; 0 serious community accident; emergency access maintained	%; No.	Daily during construction	Contractor / CSC
Community access and informal crossings	Existing local tracks and field approaches used by communities	100% affected access points provided with safe temporary access or alternative route before restriction; 72-hour advance notice for planned closures	%; hours/days	Daily during access restriction	Contractor / CSC
Water/drainage conflict and GRM	No change to formal water rights; potential perception of flood/drainage diversion	100% water/drainage complaints logged; acknowledgement within 2 working days; preliminary review within 7 working days; no unresolved complaint beyond agreed timeframe	No.; days	Monthly and as complaints arise	PIU / CSC / Contractor
Security management	No known major security incident in ESMP baseline; security may be required for camp/materials	100% security personnel licensed/vetted where private; 100% sign Code of Conduct; 100% trained before deployment; 0 excessive-force/harassment/SEA-SH incident	%; No.	Before deployment and monthly	PIU / CSC / Contractor
Downstream/adjacent flood risk during construction and early operation	Overtopping, breach, scour, erosion, blocked drainage path, flood-risk transfer, ponding and safety impacts	Verify design/freeboard/compaction and protection works; maintain hydraulic continuity; prohibit stockpiles in flow paths; inspect pre-monsoon and after rainfall; repair defects promptly; implement flood emergency communication.	Contractor / CSC / PIU	FPB crest, slopes, toe/apron, drainage paths and adjacent settlements	Weekly, pre-monsoon and after significant rainfall/high-flow events
Sediment/spoil excavation and reuse/disposal	Contaminated or unsuitable material reuse; sediment transport;	Visually screen all excavated material; test suspect material through certified lab; reuse only clean/suitable material; dispose	Contractor / CSC	Excavation areas, stockpiles, borrow areas and disposal sites	Before reuse/disposal and each suspect stockpile/source

Indicator / Risk Area	Baseline	Target / Compliance Standard	Unit	Frequency	Responsibility
	disposal in drainage/flood paths	unsuitable/contaminated material at approved locations away from watercourses and agricultural land.			
Water/drainage use and conflict risk	Disputes among upstream/downstream farmers/communities due to perceived flow obstruction or diversion	Maintain drainage/flood-flow continuity; consult users before works on active reaches; disclose sequencing; avoid unauthorized bund cuts/closures; resolve complaints through GRM with local administration/Irrigation Department support where needed.	Contractor / CSC / PIU	FPB corridor, nearby settlements and agricultural areas	Monthly and during works on active reaches
Community access and informal crossings	Temporary disruption of movement to fields, homes, schools, mosques, markets, health facilities and grazing areas	Map existing access routes/crossings; provide temporary crossings/ramps/bypasses before closure; give 72-hour notice; install signage/flag persons; maintain emergency access.	Contractor / CSC	Access routes, field approaches, informal crossings and settlements	Daily during access restrictions
Security management	Community intimidation, harassment, excessive force or unmanaged security personnel conduct	Use only licensed/vetted private security where engaged; document public-security coordination; require Code of Conduct; train security staff on ESS4, human rights, SEA/SH, GRM referral and proportional conduct.	PIU / Contractor / CSC	Camp, material yards, work fronts and access points	Before deployment and monthly

Table 7-3: 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 excavations 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	✓	✓	
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	✓	✓	
Design of embankments and drainage	Reduced effectiveness under extreme rainfall	Climate-resilient design with adequate freeboard and enhanced drainage; hydrology reviewed against recent floods and climate projections.	Design Consultant / PMU	Design stage	Once during design approval	Climate-resilient design parameters incorporated	✓	✓	

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	Camp, drains, irrigation channels	Monthly	PM10 concentration $\leq$ 150 $\mu\text{g}/\text{m}^3$ (24-hour NEQS)	✓	✓	
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 within NEQS; no unresolved complaints	✓	✓	
Construction camps and works near water bodies	Surface and groundwater contamination	Community consultations, access/crossing notices, water/drainage-user engagement, grievance redress and follow-up with nearby settlements.	Contractor	Camp, disposal sites	Monthly	Fecal coliform $\leq$ 0 per 100 mL; turbidity $\leq$ 50 NTU above baseline	✓	✓	
Construction and camp waste generation	Soil and water pollution	Waste segregation; disposal at approved sites; used oil to licensed recyclers; reuse bituminous material	Contractor	Camps, disposal sites	Monthly	No uncontrolled dumping; disposal records	✓	✓	✓
Camp establishment	Loss of vegetation; dust on crops	Limit vegetation clearance; dust suppression; crop protection;	Contractor	Camps, access routes	Monthly	Area of vegetation cleared (m^2) per approved	✓	✓	

Activities	Environmental / Social Impact	Mitigation Measures	Implementing Entity	Monitoring Location	Monitoring Frequency / Duration	Monitoring Parameter (for compliant action)	CSC	PIU	M&E C
and access routes		compensatory plantation with communities.				design; compensatory plantation ratio 5:1			
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; training records; no child labor	✓	✓	✓
Construction near communities	Accidents; unsafe access	Fencing and demarcation; barricade open pits; warning signage and lighting; emergency response.	Contractor	Work sites near settlements	Weekly	No unauthorized access; no accidents	✓	✓	
Construction traffic and site activities	Traffic congestion; accidents; public safety risks	Monitoring of environmental quality (air, water, noise), sediment/spoil testing where required, and post-rainfall embankment/drainage inspections.	Contractor	Haul routes, work sites, settlements	Daily during construction	Approved TCSMP implemented; no serious incidents	✓	✓	✓
Temporary access restriction	Livelihood disruption; vulnerable groups affected	Social and environmental impact monitoring, including access/crossing checks, water/drainage complaints,	Contractor / PMU	Project area	Monthly	Complaints resolved within timeframe	✓	✓	

Activities	Environmental / Social Impact	Mitigation Measures	Implementing Entity	Monitoring Location	Monitoring Frequency / Duration	Monitoring Parameter (for compliant action)	CSC	PIU	M&E C
		community safety, women/vulnerable groups and consultation/FGD records.							
Labor influx	Community– worker conflict	Local hiring; Code of Conduct; Community Liaison Officer; GRM use.	Contractor	Camps and communities	Monthly	100% of complaints resolved within 30 working days	✓	✓	
Labor influx	GBV / SEA / SH risks	GBV Code of Conduct; worker training; confidential reporting; referrals; zero tolerance.	Contractor	All work sites	Quarterly	100% of workers trained; training attendance register	✓	✓	✓
Construction activities	Disturbance to cultural practices	Community consultations; avoid sensitive times; respect customs.	Contractor	Project area	Monthly	Number of unresolved community complaints >14 days old = 0	✓	✓	
Overall project implementation	Residual environmental and social risks	Continuous ESMP monitoring, supervision, and corrective actions.	Contractor / PMU	Entire project	Throughout project	Residual impacts low and manageable	✓	✓	✓

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 occur, 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 7-4: ESMP Implementation Cost Breakdown

Sr. No.	Component	Description / Cost Basis	Qty	Unit Rate	Estimated Cost PKR
1	Environmental Mitigation Measures				
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
		Subtotal — Environmental Mitigation			939,200
2	Social Mitigation Measures				
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
		Subtotal — Social Mitigation			823,000
3	Training and Capacity Building				
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
		Subtotal — Training and Capacity Building			425,000

Sr. No.	Component	Description / Cost Basis	Qty	Unit Rate	Estimated Cost PKR
4	Monitoring and Reporting				
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
		Subtotal — Monitoring and Reporting			944,000
5	HR / ESMP Implementation Staff				
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
		Subtotal — HR Cost			1,638,000
6	Contingency	For emergency incidents, additional mitigation, sirens, loud speakers, spill response, additional consultations and unforeseen ESMP requirements; 5% of subtotal	5%	-	238,460
		Total ESMP Budget — 18 Months			5,007,660

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, camp management). The Contractor shall maintain records and submit to CSC and PIU.

Table 7-5: Details of Training Framework/ Capacity Building for the Proposed Project.

Sr. No.	Key Areas	Key Aspects to Cover	Potential Participants	Frequency of Training	Responsibility
1.	E&S Orientation / Awareness	E&S awareness; WB Environmental and Social Standards (ESSs); OHS and CHS aspects; Local E&S Legal requirements ESMF findings; Checklist /ESMP and its components; and GBV and GRM. Reporting on incidents and accidents and emergency preparation and response,	IFRAP Project staff including Implementing Partners	At the start of the project; and Refresher afterwards as and when required. /bi-annual basis	Environmental, Social & Gender Specialists of IFRAP

Sr. No.	Key Areas	Key Aspects to Cover	Potential Participants	Frequency of Training	Responsibility
		preparedness Labor Management Procedures Resettlement and Land Acquisition.			
2.	GBV/SEA/SH	Prevention of GBV/SEA/SH GRM for GBV/SEA/SH	IFRAP Project staff including Implementing Partners	At the start of the project; and Refresher afterwards as and when required/ bi-annual.	Social & Gender Specialists of IFRAP
3.	ESMF/ESMP Implementation	ESMF components; Key steps for the implementation of ESMF; Checklists used in the field; GRM & GBV; Checklist /ESMP implementation; and Documentation and reporting	IFRAP Project staff including Implementing Partners	At the start of the project; and Refresher afterwards as and when required/ bi-annual	Environmental, Social & Gender Specialists of IFRAP
4.	E&S Management	E&S mitigation plans; Stakeholder mapping and engagement OHS and CHS aspects Sensitize and aware project women beneficiaries on financial assistance for cash grants and the construction of multi hazard resilient houses Sensitization and awareness of women beneficiaries on GRM and for potential disasters Emergency Prevention, preparedness and response planning Resource Efficiency and Pollution Prevention and Management.	IFRAP Project staff including Implementing Partners staff /Masons' community groups/ women beneficiary	At the start of the project; and On-going/informal	Environmental, Social & Gender Specialists of IFRAP Gender FP (Implementing Partners)

The major construction activities have been mentioned in the following table:

Table 7-6: Construction Activities

(i)	Masonry	(vii)	OSHA safety requirements
(ii)	Electrical	(viii)	Reading and interpreting drawings
(iii)	Framing	(ix)	Erecting
(iv)	Concrete	(x)	Crane and Rigging
(v)	Excavation	(xi)	Operation of Construction equipment

(vi)	Environmental codes	(xii)	Use of Power tools
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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 and Community Access Management Plan, Emergency Response/Flood Preparedness Plan, Community Health and Safety Plan, Labor Management Plan, Camp Management Plan, Security Management Procedure, Sediment Testing/Reuse/Disposal Protocol, Gender Action measures (as applicable), GRM arrangements and Chance Find Procedure. All contractor templates and procedures shall use Pakistan/Balochistan-relevant institutions, local languages and local risk terminology and shall not retain country-inappropriate references from other jurisdictions.

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

Security management requirements shall be implemented within the Contractor's C-ESMP/Security Management Plan where security personnel are engaged. The PIU/CSC shall verify before deployment that any private security company is duly licensed in Pakistan/Balochistan and has no known record of human-rights abuse or excessive use of force. Any public security support shall be documented through written coordination/arrangement and shall require compliance with national law, ESS4, respectful community interaction, proportional use of force and the project Code of Conduct.

The C-ESMP shall also include the sediment testing/material reuse and disposal protocol, community access and informal crossing arrangements, and water/drainage-conflict management measures described in Sections 6.5 and 7.5. The Contractor shall submit these sub-plans to CSC/PIU for review prior to mobilization and shall update them whenever site conditions or community feedback require revision.

8 REFERENCES

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

1. Environment and social framework (ESMF)
2. Project Appraisal Document – IFRAP
3. Bidding Documents (Flood Protection Bund Gandava Town).
4. Engineering Drawings (Flood Protection Bund Gandava Town).
5. The Balochistan Environmental Protection Act, 2012.
6. The Pakistan Environmental Protection Act, 1997.
7. The Balochistan Wildlife Protection, Preservation, Conservation and Management Act, 2014.
8. The International Union for Conservation of Nature (IUCN) Red List of Threatened Species.
9. Guidelines for Public Consultation, Pakistan Environmental Protection Agency (Pak-EPA).
10. National Disaster Management Plan (NDMP), Government of Pakistan, 2012.
11. Balochistan Integrated water Resources and Development Project – BIWRMD

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 behavior 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	• Type of Hazardous Material and waste • Routes of Entry • Safety Labelling • Use of Safety Data Sheet • Goal and Objectives • Actions to Do and Preventive Measures • How to avoid Injuries	Throughout the project	Daily Basis	All construction staffs
2.	Waste Management	• Introduction to types and waste • Solid Waste and its types • Effects of Solid waste • Waste Management Concept Collection, storage, and disposal techniques • What to do and what no to do	Throughout the project	Daily Basis	All construction staff working on regulating structures
3.	Efficient & safe driving practices, including road & vehicle restrictions	• Introduction • Causes of Road Accidents • Driving hazards • Road Journey • Vehicle inspection • Health Condition	Throughout the project	Monthly Basis	All staff
4.	Actions to be taken in the event of major or minor pollution event on land/Pollution Prevention	• Type of pollution and its causes • How to Avoid pollution • What to do in case of an event • Reduction Techniques • Benefits	Throughout the project	Monthly Basis	All Staff
5.	Health & Safety: Safe way to work & hazard awareness	• Objectives • Types of Hazards • Work at height procedures • Moving of machinery • Use of PPEs • Housekeeping	Throughout the project	Weekly	All construction staff

S. No	List of Topics/Training	Contents	Timeline	Frequency	Staff
		Hazards control			
6.	Health & Safety: Safe use of plant & equipment	- Use of Plant procedures - Competency and training - Machine guarding - Dismantling of equipment - Daily maintenance - Safe operation - Intended use of equipment's	Throughout the project	Weekly	Operators of plant & equipment
7.	Health & Safety: Working at height	- Access and Egress, Loading Places - Ladders - Landing Places - Openings, Corners, Breaks, Edges, and Joisting - Work over Water - Safety Nets, Belts and Harnesses	Throughout the project	Monthly	All construction staff
8.	Health & Safety: Working near/on water	- Contamination and biological/chemical hazards - Weather conditions - Hypothermia and hyperthermia - Unstable surface - Electrical hazards - Lone working - Accidental immersion	Throughout the project	Monthly	All construction staff
9.	Health & Safety: Use of PPE	- Common Type of PPEs - Use of PPEs - Benefits - Workplace requirement of PPEs - Care and Maintenance of PPEs - When PPE is necessary - Limitations of the PPE	Throughout the project	Daily Basis	All construction staff
10.	Emergency procedures and evacuation	- Types of emergency - What is an Emergency plan - What is an individual role in case of emergency - Supervising Rescue Operations - Emergency reporting procedures - Means of egress	Throughout the project	Weekly Basis	All staff

S. No	List of Topics/Training	Contents	Timeline	Frequency	Staff
11.	Fire fighting	- Objectives - How fire starts - Use of fire extinguishers - Type of Fire extinguishers - Fire safety inspection - Competency required - Action in case of fire - Do's and Don'ts	Throughout the project	Monthly drills	All staff
12.	Site inductions, including requirements under the CESMP & details of environmentally sensitive areas of the site	- Purpose of induction training - Why health and safety is important - What is CESMP - What is the requirement of CESMP - Duty of care and responsibility - Your responsibility and our responsibility - Protection of Environment - What is an ecosystem - What is ecology - Identification of key species	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	- Valuing cultural difference - Avoiding habits in other areas during migration - What are sexually transmitted diseases - Type of infection - Prevention - Strategies for controlling vector-borne diseases - Type of vector-borne diseases - Treatment procedures	Throughout the project	Quarterly	All staff

S. No	List of Topics/Training	Contents	Timeline	Frequency	Staff
14	Culturally sensitive awareness raising on GBV/SEA/SH	• Definition and types of GBV, SEA, and SH • Causes, risks, and impacts on individuals and communities • Respect for local culture, norms, and values • Appropriate behaviour and valuing cultural differences • Rights of women, children, and vulnerable groups • Code of Conduct: acceptable and prohibited behaviours • Zero tolerance for GBV, SEA, and SH • Prevention measures and safe workplace practices • Awareness on HIV/AIDS and sexually transmitted diseases (STDs) • Basic knowledge of vector-borne diseases and prevention • Reporting mechanisms (GRM) and confidentiality • Survivor support services (medical, psychosocial, legal)	Throughout the project	Monthly Basis	All staff/Community

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

	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.	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.
Soil erosion and siltation	Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies.	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)
Handling, use, storage & disposal of hazardous material and waste	Water pollution from the storage, handling, and disposal of hazardous materials and general construction waste, and accidental spillage	Follow the management guidelines proposed in ECoPs for Waste Management and Management of Fuels & 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

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.

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	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: <u>Avi-Fauna</u> • Greter Spotted Eagle (<i>Aquila clanga</i>)-April and May • Houbara Bustard (<i>Chlamydotis undulata</i>)-March & October • Black-tailed Godwit (<i>Limosa limosa</i>)-March to August <u>Reptiles</u> • Bengal Monitor (<i>Varanus bengalensis</i>)-June to September • Tortoise Afghan (<i>Testudo horsfieldii</i>)-May or June <u>Mammals</u> • Common Hill fox (<i>Vulpes vulpes</i>)- December or February • Chinkara (<i>Gazella bennetti</i>)-August to Ocotober & March to April
General construction works	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 i) biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, wastewater, vector transmitted diseases, etc), ii) risk factors resulting from human behavior (e.g. STD, HIV, etc) and iii) Road accidents from construction	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 effective surveillance over public health, social and

	traffic.	security matters. The Contractor shall follow the ECoPs presented in the following tables to reduce health risks to the construction workers and nearby community
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ECOP for Traffic Management

Activity	Environmental Impact	Environmental Management Guideline
Construction vehicular traffic	Increased traffic use of roads by construction vehicles will affect the movement of normal road traffics and the safety of the road- users. Accidents and spillage of fuels and chemicals	Restrict truck deliveries, where practicable, today time working hours. Restrict the transport of oversize loads. Operate road traffics/transport vehicles, if possible, at non-peak periods to minimize traffic disruptions. Enforce on-site speed limit. Prepare and submit a traffic management plan to Supervisory Consultant for their approval. 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:

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.
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.	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.
Disposal of waste	Management of wastes is crucial to minimize impacts on the environment, such as soil or water pollution.	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.
		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 PROCEDURES 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, Blochistan 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 under this project.

Summary of Action Required

Summary of Non-compliances

S. No	Non-Compliances	Actions Required	ending Since	Status of Previous Month Non-compliances
1	Include Particular Non-Compliance Observed	Include Action Require, as per ESMP	Include Number of Months	Include so far progress made from the previous month
	----	---	---	----

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/37

Date: 15th November, 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 November 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	Restoration of Flood Protection Bund Gandawah Town left and Right-Side District Jhal Magsi	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

Plot No: #233, Street No: #6 Sector 8-C, Hajra Masjid Muhammad Ali Gouth, Hazrat Bilal Colony, Korangi, Korangi Town, Karachi.
Cell: 03327983594, 03302744735, Email: ges.karachi@semail.com

NEW HEAD OFFICE-LAB

Plot No: SC-46, Block Commercial Sector 31/D P&T Society Korangi, Karachi.
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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	Gandava Town FPB Restoration Scheme	PKG-VI – Jhal Magsi District:	Flood Protection Bund restoration works	Sediment inflow, erosion, disposal of silt	Temporary land use for construction, community safety	Design silt trap, use borrow area rehabilitation plan, safety signage	Moderate
				FPB 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

Analysis Report Ref # SES/Env/NOV/25/2948/3838-E Date: 16-11-2025

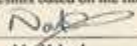
Description:

Quantity of sample	1.0 Liter	Sampling Methodology	Grab
Analysis Type	Chemical Analysis	Sampling Date	06-11-2025
Project	INTEGRATED FLOOD RESILIENCE AND ADAPATION PROJECT (IFRAP)		
Site Location:	Restoration of Flood Protection Bund Gandawah Town left and Right-Side District Jhal Magsi (PACKAGE-VI)		
Client Name :	CAMEOS CONSULTANT, QUETTA OFFICE		

Ground Water Test Report

S. No	Measuring Parameter	Units	Testing Method	NEQS Limits	WHO Limits	BEQS Limits	Results
1	Temperature AT 40 °C	°C	By Calibrated Thermometer	40 ± 0.3 °C	40 ± 0.3 °C	40 ± 0.3 °C	30.3
2	pH @ 25 °C	pH	ASTM D-1293	6 to 9	6 to 9	6 to 9	7.51
3	Biological Oxygen Demand	BOD ₅ (mg/L)	APHA 5210	80	80	80	22.95
4	Chemical Oxygen Demand	COD (mg/L)	ASTM D-1252	150	150	150	145.9
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 ⁻ (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 ⁻ (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 ⁻² (mg/L)	APHA 4500 Se	0.5	0.5	0.5	ND
13	Sulfide	S ⁻² (mg/L)	APHA 4500-S ⁻²	1.0	1.0	1.0	0.74
14	Ammonia	NH ₃ (mg/L)	ASTM D-1426	40	40	40	19.1
15	Cadmium	Cd ²⁺ (mg/L)	ASTM-D3557	0.1	0.1	0.1	<0.52
16	Chromium Trivalent	Cr ³⁺ (mg/L)	APHA 3500-Cr	1.0	1.0	1.0	ND
17	Chromium Hexavalent	Cr ⁶⁺ (mg/L)	APHA 3500-Cr	1.0	1.0	1.0	0.050
18	Lead	Pb ²⁺ (mg/L)	ASTM-D3559	0.5	0.5	0.5	0.84
19	Mercury	Hg ²⁺ (mg/L)	Kit Method	0.01	0.01	0.01	ND
20	Nickel	Ni ²⁺ (mg/L)	HACH Dimethylglyoxime Method	1.0	1.0	1.0	ND
21	Silver	Ag (mg/L)	ASTM-D3866	1.0	1.0	1.0	ND
22	Zinc	Zn ²⁺ (mg/L)	HACH Zincon Method	5.0	5.0	5.0	0.87
23	Total Iron	Fe ²⁺ (mg/L)	APHA 3500-Fe	8.0	8.0	8.0	0.11
24	Manganese	Mn ²⁺ (mg/L)	APHA 3500-Mn	1.5	1.5	1.5	0.09
25	Boron	B (mg/L)	APHA 4500-Mn	6.0	6.0	6.0	0.95
26	Sulfate	SO ₄ (mg/L)	APHA 4500-SO ₄	600	600	600	309
27	Arsenic	As (mg/L)	Palintest Kit	1.0	1.0	1.0	ND
28	Copper	Cu ²⁺ (mg/L)	HACH Biquinoline Method	1.0	1.0	1.0	0.09
29	Chlorine	Cl ₂ (mg/L)	HACH DPD Method	1.0	1.0	1.0	ND
30	Aluminum	Al (mg/L)	HACH Eriochrome Cyanine R	1.0	1.0	1.0	ND
31	Total Kjeldahl Nitrogen	(mg/L)	Kit Method	2.0	2.0	2.0	0.75
32	Barium	Ba (mg/L)	ASTM D-4382	1.5	1.5	1.5	0.79

Note:
 BEQS-Balochistan 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.
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 The measurement results based on the time of monitoring
 WL- Within Limit

Field Analyst:  **Mr. Nabeel**

Chief Chemist:  **Kashaf Ahmed**





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Sustainable Environmental Services SES

Analysis Report

Ref # SES/Env/NOV/25/2948/1838-D

Date: 16-11-2025

Description:

Quantity of sample	1.0 Liter	Sampling Methodology	Grab	Job Date	06-11-2025
Analysis Type	Chemical Analysis		Sampling Location		Project Site
Project:	INTEGRATED FLOOD RESILIENCE AND ADAPATION PROJECT (IFRAP)				
Site Location:	Restoration of Flood Protection Bund Gandawah Town left and Right-Side District Jhat Magal (PACKAGE-VI)				
Client Name :	CAMEOS CONSULTANT, QUETTA OFFICE				

Surface Water Report

S #	Parameters	Units	Testing Method	NEQS Limits	WHO Limits	BEQS Limits	Result	Remarks
01	Turbidity	NTU	HACH Turbidity meter	<5	<15	<15	<0.07	WL
02	Taste	Taste	Sensory Evolution	Obj/Non Obj	Obj/Non Obj	Obj/Non Obj	Saline	WL
03	Odour	Odor	Sensory Evolution	Obj/Non Obj	Obj/Non Obj	Obj/Non Obj	Non-obj	WL
04	Colour	TCU	Pt-Co method	≤ 15 TCU	≤ 15 TCU	≤ 15 TCU	<3.1	WL
05	Phenolic Compounds	As Phenol (mg/L)	ASTM D-1783	-	-	-	ND	WL
06	Residual chlorine	Cl ₂ (mg/L)	HACH Method 8167	0.2-0.5	-	0.2-0.5	0.71	OL
07	pH @ 25 °C	pH	ASTM D-1293	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	7.91	WL
08	Total Dissolved Solid	TDS (mg/L)	APHA 2540-C	< 1000	< 1000	< 1000	1163	OL
09	Total Hardness	As CaCO ₃ (mg/L)	APHA 2340-C	< 500	-	< 500	359	WL
10	Fluoride	F ⁻¹ (mg/L)	APHA 4500-F ⁻¹	≤ 1.5	1.5	≤ 1.5	1.1	WL
11	Chloride	Cl ⁻¹ (mg/L)	APHA 4500-Cl ⁻¹	< 250	250	< 250	276	OL
12	Cyanide	CN ⁻¹ (mg/L)	HACH Method 8027	≤ 0.05	0.07	≤ 0.05	ND	WL
13	Nitrate	NO ₃ ⁻¹ (mg/L)	HACH Method 8192	≤ 50	50	≤ 50	0.24	WL
14	Nitrite	NO ₂ ⁻¹ (mg/L)	APHA 4500-NO ₂ ⁻¹ -B	≤ 3.0(P)	3	≤ 3.0(P)	0.09	WL
15	Antimony	Sb (mg/L)	ASTM D-3697	≤ 0.005	0.02	≤ 0.005	ND	WL
16	Aluminum	Al(mg/L)	ASTM D-857	≤ 0.2	0.2	≤ 0.2	0.11	WL
17	Arsenic	As (mg/L)	ASTM D-2972	≤ 0.05	0.01	≤ 0.05	ND	WL
18	Boron	B (mg/L)	ASTM D-3082	0.3	0.3	0.3	ND	WL
19	Barium	Ba(mg/L)	ASTM D-4382	0.7	0.7	0.7	0.010	WL
20	Chromium Total	Cr(mg/L)	ASTM D-1687	≤ 0.05	0.05	≤ 0.05	ND	WL
21	Copper	Cu (mg/L)	ASTM D-1688	2	2	2	<0.09	WL
22	Cadmium	Cd(mg/L)	ASTM D-3557	0.01	0.003	0.01	ND	WL
23	Lead	Pb(mg/L)	ASTM D-3559	≤ 0.05	0.01	≤ 0.05	ND	WL
24	Manganese	Mn(mg/L)	ASTM D-858	≤ 0.5	0.5	≤ 0.5	ND	WL
25	Mercury	Hg (mg/L)	ASTM D-3223	≤ 0.001	0.001	≤ 0.001	ND	WL
26	Nickel	Ni(mg/L)	ASTM D-3866	≤ 0.02	0.02	≤ 0.05	ND	WL
27	Selenium	Se(mg/L)	ASTM D-3858	0.01	0.01	0.01	0.08	WL
28	Zinc	Zn (mg/L)	ASTM D-1691	5	3	5	0.78	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:

Mt. Nabeel

Chief Chemist:



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Sustainable Environmental Services | SES

Analysis Report

Ref # SES/Env/NOV/25/2948/3838-C

Date: 16-11-2025

Description:

Job Location:	JHAL MAGSI	Testing Instrument:	Noise Meter
Job Performed By:	Mr. Nabeel	Job Location :	05-11-2025 to 06-11-2025
Monitoring Duration:	(10:00 AM To 09:00 AM) 24 Hrs.		
Project:	INTEGRATED FLOOD RESILIENCE AND ADPATATION PROJECT (IFRAP)		
Site Location:	Restoration of Flood Protection Bund Gandawah Town left and Right-Side District Jhal Magi (PACKAGE-VI)		
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) (Day time)	75 dB(A) (Day time)	10:00AM	37.47		
02					11:00AM	35.03		
03					12:00PM	35.54		
04					01:00PM	39.80		
05					02:00PM	39.19		
06					03:00PM	40.00		
07					04:00PM	37.16		
08					05:00PM	38.07		
09					06:00PM	37.77		
10					07:00PM	34.93		
11					08:00PM	38.38		
12					09:00PM	38.18		
13			55 dB(A) (Night time)	65 dB(A) (Night time)	10:00PM	31.49		
14					11:00PM	28.85		
15					12:00AM	29.56		
16					01:00AM	30.98		
17					02:00AM	27.43		
18					03:00AM	25.00		
19					04:00AM	28.04		
20					05:00AM	25.91		
21					06:00AM	27.53		
22					65 dB(A) (Day time)	75 dB(A) (Day time)	07:00AM	26.32
23							08:00AM	35.84
24							09:00AM	32.50
Average Result							33.37	

Note:

BEQS-Baluchistan Environmental Quality Standards
The instruments used were duly calibrated.
The measurements were carried out.
The client is responsible for law.
This report is not valid for Co.
The measurement results base
WL= Within Limit

Field Analyst:

Mr. Nabeel

Chief Chemist:



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Analysis Report

Ref # SES/Env/NOV/25/2948/3838-B

Date: 16-11-2025

Description:

Job Location:	JHAL MAGSI	Testing Instrument	24 Hours Air Monitoring Station
Job Performed By:	Mr. Nabeel	Job Date :	05-11-2025 to 06-11-2025
Monitoring Duration:	(10:00 AM To 09:00 AM) 24 Hrs.		
Project:	INTEGRATED FLOOD RESILIENCE AND ADPATION PROJECT (IFRAP)		
Site Location:	Restoration of Flood Protection Bund Gandawah Town left and Right-Side District Jhal Magi (PACKAGE-VI)		
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 ³	-	40 (24 hrs.)	13.00	WL
2.	Oxide Of Nitrogen as (NO ₂)	µg/m ³	25(24 hrs.)	80 (24 hrs.)	30.99	WL
3.	Sulphur Dioxide (SO ₂)	µg/m ³	40(24 hrs.)	120 (24 hrs.)	5.20	WL
4.	Carbon Monoxide (CO)	mg/m ³	4(24 hrs.)	5 (08 hrs.)	0.0411	WL
5.	Particulate Matter (PM 2.5)	µg/m ³	15(24 hrs.)	35 (24 hrs.)	26.77	WL
6.	Particulate Matter (PM 10)	µg/m ³	45(24 hrs.)	150 (24 hrs.)	84.88	WL
7.	SPM	µg/m ³	-	500 (24 hrs.)	112.64	WL
8.	Ozone (O ₃)	µg/m ³	60(Peek Season)	130 (01 hr.)	5	WL

Note:

BEQS=Baluchistan Environmental Quality Standards
The instruments used were dully 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:

Nabeel

Mr. Nabeel

Chief Chemist:

Kashif Ahmed

Kashif Ahmed

ASCERT

ASCERT

ASCERT

ISO 9001:2015

ISO 14001:2015

ISO 9001:2015



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Sustainable Environmental Services SES

Analysis Report

Ref # SES/Env/NOV/25/2948/3838-A

Date: 16-11-2025

Description:

Job Location:	JHAL MAGSI	Testing Instrument	24 Hours Air Monitoring Station
Job Performed By:	Mr. Nabeel	Job Date :	05-11-2025 to 06-11-2025
Monitoring Duration:	(10:00 AM To 09:00 AM) 24 Hrs.		
Project:	INTEGRATED FLOOD RESILIENCE AND ADPATATION PROJECT (IFRAP)		
Site Location:	Restoration of Flood Protection Bund Gandawah Town left and Right-Side District Jhal Magsi (Package-VI)		
Client Name:	CAMEOS CONSULTANT, QUETTA OFFICE		

Air Quality Test Report

Parameters	Temp	NO	NO ₂	SO ₂	CO	PM _{2.5}	PM ₁₀	SPM	O ₃
NEQS & BEQS Limit	-	24 hrs. (40 µg/m ³)	24 hrs. (80 µg/m ³)	24 hrs. (120 µg/m ³)	08 hrs. (5 mg/m ³)	24 hrs. (35 µg/m ³)	24 hrs. (150 µg/m ³)	24 hrs. (500 µg/m ³)	01 hr. (130 µg/m ³)
WHO Limit	-	-	24 hrs. (25 µg/m ³)	24 hrs. (40 µg/m ³)	08 hrs. (4 mg/m ³)	24 hrs. (15 µg/m ³)	24 hrs. (45 µg/m ³)	-	Peak Season (60 µg/m ³)
Time	Results								
10:00AM	33°C	19.2	33.5	5.27	0.062	25.4	88.2	113.6	05
11:00AM	33°C	16.8	36.3	4.02		23.9	93.5	117.4	-
12:00PM	35°C	17.9	36.5	4.21		24.7	104.7	129.4	-
01:00PM	35°C	19.8	38.8	6.55	0.037	28.1	99.4	127.5	-
02:00PM	35°C	16.7	36.4	5.50		25.6	86.6	112.2	-
03:00PM	36°C	18.1	39.7	5.17		27.4	113.0	140.4	-
04:00PM	36°C	15.9	37.5	6.30	0.044	29.3	132.3	161.6	-
05:00PM	34°C	18.4	37.8	4.98		26.6	105.5	132.1	-
06:00PM	34°C	15.2	32.6	4.36		25.4	103.6	129.0	-
07:00PM	34°C	12.7	26.7	6.67	0.046	25.7	85.4	111.1	-
08:00PM	33°C	11.8	28.5	5.05		27.6	87.9	115.5	-
09:00PM	32°C	11.3	28.6	6.21		29.4	88.4	117.8	-
10:00PM	31°C	12.5	39.5	4.15	0.034	27.8	91.0	118.8	-
11:00PM	30°C	10.3	28.0	5.97		28.4	79.1	107.5	-
12:00AM	29°C	9.2	25.6	4.90		28.8	78.3	107.1	-
01:00AM	29°C	10.7	27.3	4.28	0.022	25.9	54.0	79.9	-
02:00AM	28°C	9.5	30.7	3.95		26.3	81.2	107.5	-
03:00AM	27°C	7.9	24.5	4.81		29.6	68.9	98.5	-
04:00AM	28°C	6.7	27.4	6.35	0.047	28.2	66.5	94.7	-
05:00AM	26°C	8.5	25.9	6.54		29.3	77.5	106.8	-
06:00AM	27°C	9.1	26.7	6.27		24.4	34.4	58.8	-
07:00AM	28°C	11.6	30.0	5.40	0.035	26.6	65.1	91.7	-
08:00AM	29°C	12.9	24.8	4.05		25.7	68.9	94.6	-
09:00AM	30°C	12.4	27.7	5.82		27.5	71.0	98.5	-
AVERAGE	30.7°C	13.00	30.99	5.20	0.0411	26.77	84.88	112.64	05



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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
Institutional Strengthening & Participation	• Ensure at least 40% women's representation in community-level FGDs and Consultations. • Provide gender-	• 40% women in DRMCs. • of personnel trained (gender-disaggregated). • of women-form groups and engaged in activities.	• 40% women representation. • 100% CSC staff and contractors trained.	PIU, CSC Gender/Social Specialist	Throughout project

Strategic Area	Activities	Indicators	Targets	Responsibility	Timeline
	sensitivity, SEA/SH, and safeguards sessions to community • Engage local women's organizations for community outreach. • Provide gender-sensitivity, SEA/SH, and safeguards sessions to CSC and contractor staff				
Gender-Responsive Infrastructure and Services	• Integrate women-friendly design (Footbridges and/or passages in strategic locations of the irrigation system accessibility) in flood-resilient sub-project reconstruction. • Prioritize pregnant/lactating women and women with disabilities during service reconstruction-restoration.	• of facilities with gender-responsive design. • % women beneficiaries.	• 100% facilities compliant. • 50% women beneficiaries.	CSC and Contractor Infrastructure Specialist	Years 1–3
Disaster Risk Reduction & Climate Resilience	• Include women in early warning dissemination and community preparedness planning. • Conduct disaster preparedness awareness sessions targeting women and girls. • Promote women's engagement in climate-resilient water and land management.	Rehabilitation/restoration of Gandava Town Flood Protection Bund left and right-side, including earthen embankment strengthening, compaction, stone pitching, geotextile, gabion/apron toe protection, erosion/scour control, access management and site restoration.	• 30% women participation. • Annual awareness sessions conducted.	PIU, CSC Social and Gender team	Years 1–3
Safeguards & GBV/SEA/SH Risk Prevention	• Establish GBV referral pathways and confidential reporting mechanisms. • Conduct community-level awareness on GBV Enforce a Code of Conduct for all workers addressing GBV, SEA, and SH. • Ensure labor	• GBV mechanism operational. • # awareness sessions conducted.	• Functional system in all project areas.	PIU Safeguards Specialist; Contractors;	Throughout the project

Strategic Area	Activities	Indicators	Targets	Responsibility	Timeline
	influx and OHS plans integrate SEA/SH mitigation.				
Gender responsive Grievance Redress Mechanism	• Establish women-friendly GRM access points, including female focal persons. • Conduct GRM awareness sessions, including women-only sessions.	Mula/Kachhi plain seasonal floodplain setting with flood-prone FPB alignment, local access tracks and agricultural land; no notified protected area, wetland or critical habitat within the works footprint.	• 40% women participation. • Monthly and Quarterly awareness sessions conducted.	PIU, CSC Social and Gender team	Throughout project
Monitoring and Reporting	• Monthly ESMP Monitoring Reports • Quarterly Social Safeguards Reports • GAP Progress Reports • GRM records and community feedback	No critical habitat or protected biodiversity feature in the footprint; common shrubs/bushes and agricultural vegetation may be affected and shall be avoided/minimized and compensated/restored where required.	Monitoring data will be sex-disaggregated and used to adapt implementation as needed.	PIU Gender Specialist will oversee compliance, with third-party monitoring where required.	Throughout project

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.

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)?	☐ Yes ☐ No	
2	Were female social mobilizers present?	☐ Yes ☐ No	
3	Was women's participation at least 30–40%?	☐ Yes ☐ No	
4	Were meeting timings suitable for women?	☐ Yes ☐ No	
5	Was the venue safe and culturally appropriate?	☐ Yes ☐ No	
6	Were vulnerable women included (widows, elderly, disabled)?	☐ Yes ☐ No	

3. Access to Information

No.	Indicator	Yes / No	Remarks
1	Are women aware of project activities?	☐ Yes ☐ No	
2	Are IEC materials accessible and understandable?	☐ Yes ☐ No	
3	Are female mobilizers providing information?	☐ Yes ☐ No	
4	Are women aware of GRM?	☐ Yes ☐ No	
5	Is GRM information displayed at site?	☐ Yes ☐ No	

4. Livelihood & Economic Inclusion

	Indicator	Yes / No	Remarks
1	Are women involved in livelihood activities?	☐ Yes ☐ No	
2	Are income generation opportunities provided?	☐ Yes ☐ No	
3	Are women considered for project employment?	☐ Yes ☐ No	

5. Safety & Mobility

No.	Indicator	Yes / No	Remarks
1	Are safe access routes available for women?	☐ Yes ☐ No	
2	Is women's movement restricted due to project?	☐ Yes ☐ No	
3	Are separate and safe spaces available?	☐ Yes ☐ No	

6. GBV / SEA / SH Risk Management

No.	Indicator	Yes / No	Remarks
1	Is Code of Conduct implemented at site?	☐ Yes ☐ No	
2	Are workers trained on GBV/SEA/SH?	☐ Yes ☐ No	
3	Are women aware of reporting mechanisms?	☐ Yes ☐ No	
4	Are confidential reporting channels available?	☐ Yes ☐ No	
5	Is there a female focal point for complaints?	☐ Yes ☐ No	
6	Are service providers (health/legal) identified?	☐ Yes ☐ No	
7	Is worker–community interaction controlled?	☐ Yes ☐ No	

7. Health & Basic Services

No.	Indicator	Yes / No	Remarks
1	Do women have access to nearby health services?	☐ Yes ☐ No	
2	Are women facing difficulty accessing health facilities?	☐ Yes ☐ No	
3	Are sanitation facilities available for women?	☐ Yes ☐ No	

8. Women Development Groups (WDGs)

No.	Indicator	Yes / No	Remarks
1	Are WDGs formed in the area?	☐ Yes ☐ No	
2	Are women actively participating?	☐ Yes ☐ No	
3	Are WDG members involved in decision-making?	☐ Yes ☐ No	
4	Are meetings conducted regularly?	☐ Yes ☐ No	

9. Community Feedback & Needs

No.	Indicator	Yes / No	Remarks
1	Do women demand electricity/solar solutions?	☐ Yes ☐ No	
2	Do women highlight need for schools?	☐ Yes ☐ No	

3	Do women report water/sanitation issues?	☐ Yes ☐ No	
---	--	--	--

Key Issues Identified

Recommendations

Compliance Summary

Overall Compliance Rating: ☐ Good ☐ Moderate ☐ Poor

Verification

Name: _____

Designation: _____

Organization: _____

Signature: _____

Date: _____

ANNEXURE: K

ENVIRONMENTAL AND SOCIAL SCREENING CHECKLIST (B)

Component 1: Community Infrastructure Rehabilitation

Note: This checklist has been updated to align with the Gandava Town FPB ESMP narrative, impact assessment and mitigation measures. Borrow material, soil/water contamination, OHS, CHS, traffic/access, natural hazard/flood exposure, women's mobility, ESS7 applicability, water/drainage conflict risks and sediment/spoil management have been corrected and made consistent with Sections 3, 6 and 7 of the ESMP.

A	General Information	
1	Subproject Location	District: Jhal Magsi Village: Gandava Town
2	Package	Package -6
3	Subproject Activities	Restoration of Gandava Town 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	None within 200m

B: Environmental Issues

Sr. No	Issues	No/Yes	Risk Level				Remarks/Mitigation Measures
			Low	Moderate	Substantial	High	
1	Will the subproject involve significant land disturbance or site clearance?	Yes	✓			Labour inflow is expected but will be limited; preference will be given to local workers and workforce register will be maintained.	Shrubs & bushes removal.
2	Will the subproject require the setting up of ancillary facilities?	Yes (low)	✓			Potential worker-community interaction risks will be managed through local hiring, Code of Conduct, induction, CLO and GRM.	Temporary (camps, storage).
3	Will the subproject require a large amount of raw or construction materials, energy and/or water?	No				Child, forced and bonded labour are prohibited; age verification and labour records shall be maintained in line with ESS2 and national law.	Mud / Stone
4	Will the subproject generate large amounts of residual wastes, construction material waste?	Yes (near settlements/access routes)	✓			No sensitive facility is identified within 200 m, but nearby settlements/access routes may be affected by dust, traffic	No residual waste, construction material waste is expected.

						or access restrictions; CHS/TMP measures apply.	
5	Is the sub-project expected to result in soil erosion?	Yes		✓		OHS risks are present due to excavation, compaction, machinery, stone/gabion works, heat, dust and noise; PPE, training, barricading and emergency response are required.	Yes the sub project may Cause erosion
6	Is the sub project expected to create borrow pits for construction material?	Yes		✓		Refer to section 3	The sub project will not create borrow pits.
7	Will the subproject result in potential soil or water contamination (e.g., from oil, grease and fuel from equipment yards)?	Yes		✓		Yes, refer to section 6	Not soil or water contamination expected.
8	Will the subproject involve the storage, handling, or transport of hazardous substances?	No				No permanent land acquisition is anticipated; works will remain within approved FPB alignment/footprint. Any temporary land use shall require documented consent/restoration and ESS5-consistent management.	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.)	No				No loss of shelter or residential land is anticipated within the approved footprint.	Dust may be generated due to vehicle movement and construction activities.
10	Will the subproject increase ambient noise levels?	No				No informal settlers or flood-affected households are identified within the work footprint; this will be re-verified before mobilization.	No Noise pollution occur.
11	Are there any protected areas on or around the locations which could be affected by the subproject?	No				No anti-encroachment drive is required or permitted for the sub-project works.	No protected areas nearby.
12	Will there be any adverse impact on the flora due to subproject activities?	Yes (temporary/accidental risk)	✓			No permanent acquisition of agricultural land is anticipated; temporary/accidental crop or access impacts shall be avoided, documented and restored/managed through GRM.	Flora is not present at working place.
13	Will there be any adverse impact on the fauna due to subproject activities?	Yes (temporary)	✓			Temporary access restrictions to fields, grazing areas, local tracks or community facilities may occur; provide temporary crossings, ramps, bypasses and advance notice.	Fauna will not be affected by the sub-project.

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
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?	Yes	✓				Risks include public access to open excavations and construction traffic. Mitigation includes fencing, signage, and traffic management (Section 6.5.2.2)
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. The ESMP includes specific mitigation measures for flood risk (see Sections 6.5.1.8, 6.5.2.5.1, 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
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No Objection Certificate (NOC)

Baluchistan Environmental Protection Agency (BEPA) NOC / Environmental Approval Required	☒ Yes ☐ No - site-specific ESMP and updated screening checklist required and prepared.
Type of Environmental and Social Study	ESMP ☒ , E&S Checklist ☒ , RAP [not required at this stage; no permanent land acquisition anticipated], PCR/Chance Find Procedure ☒ , Sediment Testing Protocol ☒ where triggered], Security Procedure ☒ .
Any other NOC from Government of Baluchistan (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	ESMP ☒ and Environmental Checklist ☒ for this rehabilitation/restoration sub-project; EIA/IEE requirements to be confirmed with BEPA as applicable.

Conducted by:Name Mir Zarak Rodeni Designation Social Organizer

Signature _____ Date _____

Reviewed and approved by:

Name _____ Designation _____

Signature _____ Date _____

ANNEXURE: L

مشاورتی اجلاس

16-9-2023

تاریخ: 16-9-2023 مقام: گنداپہ گنداپہ وقت: از 3:30 تا 5:30

آئینہ

1. گنداپہ فلوڈ ہیرو ٹیکشن بند جھل مگسی کے حوالے سے سریفنگ
2. موجودہ بحالی (Rehabilitation) کے کام کی تفصیل پیش کرنا
3. ماحولیاتی و سماجی اثرات (ES) اور حفاظتی اقدامات کی وضاحت
4. کیمپریٹ کے مسائل خدشات اور تجاویز سنا + یقین دہانی

5:

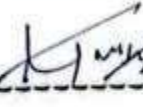
تفصیل:

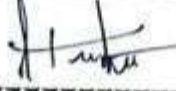
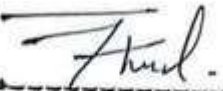
ترجیمہ گنداپہ میں آج کے اجلاس کا آغاز ملک ہاؤس سے ہوا۔ اس کے بعد (IFRAP) ٹیم نے شرماد کو خوش آمدید کہا گیا۔ اور (IFRAP) کے تحت اجلاس کا مقصد بیان کیا۔ شرکاء کو بتایا گیا کہ ہیرو جیکر کا مقصد ہے گنداپہ فلوڈ ہیرو ٹیکشن بند کی بحالی مضبوطی پانی کی پیادوں میں بہتری کے خدشات کا حل اور دھڑا زرمی فائدہ کرنا ہے۔ ڈرپ کے متعدد مقامات پر ملت جمع ہو چکی ہے۔ کنالوں کی نشانی کچھ حصوں میں گہرائی، بیکچ اور Damage پانی کی وجہ سے زراعت متاثر ہو رہی ہے پانی کی سپلائی مکمل بند نہیں کی جائے گی۔ دھواٹ کم ہے کم رکھی جائے گی ملک والوں کا

COMMUNITY CONSULTATION

لکھنؤ، رائے بیکل کے ماحولیات و سماجی امور کے
تحت ان ڈرین کی صفائی، توجیح، مرمت اور بنادگی
شامل ہیں۔
لکھنؤ کے دوران مشینری اور سائٹ مینینٹ کے طریقہ کار کے
آجماہ کیا گیا
آخر میں کمیٹی نے لکھنؤ کے ادا کیا گیا نہ انہوں نے
نفاذ اور اپنی فیملی رائے دی۔
شہر کے کو یقین دلا گیا کہ ان کی تجارت کو
(ESMP) اور محل لکھنؤ دونوں میں شامل کیا جائے گا۔
اجلاس دعائے علمائے سائے حتمی ہوا۔

تصدیق کنندہ:

- ۱: ایل جی آر سی ممبر کسان انجن: نام: Amir Sheikh، دستخط: 
- ۲: ایل جی آر سی ممبر کسان انجن: نام: Muneeb Sheikh، دستخط: 
- ۳: کمیٹی ممبرز
- ۱: نام: از خیر صگسی، دستخط: 

نام:	ادریس خان	دستخط:	
نام:	حافظ فیصل	دستخط:	
نام:	ادن خان احمد	دستخط:	
نام:	ڈاکٹر حفیظ	دستخط:	
نام:	ادیل احمد	دستخط:	
نام:	تیمور احمد	دستخط:	
پر وجیکٹ شاف:			
نام:	محمد شعیب سلمان سول انجینئر	دستخط:	
نام:	مسٹر زکریا وردی سوشل سائنس	دستخط:	
نام:	احسان اللہ بیولوگسٹ	دستخط:	
نام:		دستخط:	
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نام:		دستخط:	
نام:		دستخط:	

ANNEXURE: M

**LIST OF PARTICIPANTS IN CONSULTATIVE MEETING WITH DISTRICT
ADMINISTRATION**

S. No.	Name	Department / Organization	Designation
1	Syed Rehmatullah	District Administration	Deputy Commissioner, Jhal Magsi
2	Abdul Majeed Muhammad Hossani	District Administration	Assistant Commissioner
3	Farukh Khokar	Irrigation Department	Sub-Divisional Officer (SDO) Irrigation
4	Khalil Mengal	Agriculture Department	Agriculture Officer
5	Shakoor Kakar	CAMEOS Architects & Consultants	Social Safeguard Specialist
6	Naqeeb Ullah Kakar	CAMEOS Architects & Consultants	Social Safeguard Specialist
7	Sidra	CAMEOS Architects & Consultants	Gender Specialist
8	Mir Zarak	CAMEOS Architects & Consultants	Social Organizer
9	Mili Khan	CAMEOS Architects & Consultants	Junior Environmental Specialist

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 organised with appropriate signage in place, and that grounds are maintained (e.g., grassed areas are regularly mown). 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. 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.	Ensure that camp security personnel meet at least the following requirements: - Have not been implicated in past abuses - Are trained in appropriate conduct towards workers and community members including: - Exercising constraint and caution and understand how force may be used - Respecting human rights - Behaving consistently - Knowing and abiding by applicable laws - Fostering good community relations through their interaction and behaviour towards the workforce and communities
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.	Implement control measures to avoid and minimise the impacts of camp and living conditions on communities. Limit foreign worker interaction with communities and provide cultural sensitivity awareness training to facilitate appropriate interaction with communities.

ANNEXURE: O

CAMP MANAGEMENT PLAN

The Contractor for Package-VI shall prepare and implement a site-specific Camp Management Plan as part of the Contractor's Environmental and Social Management Plan (C-ESMP). The plan shall define mitigation measures to avoid or reduce camp-related impacts during rehabilitation of the Flood Protection Bund Gandava Town, including sanitation, worker accommodation, potable water, waste management, community interface, worker conduct and restoration of camp areas after demobilization.

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 Councilors 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
I. Pre-Construction Phase				
Site clearing for staging area Mobilization of Excavation, dredging or grading, compaction, filling 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: -Prohibition of drug and alcohol use by workers while on the job. - Provision of adequate first aid, first aiders, PPE, signage (English, urdu, sindhi and Balochi languages). - Restriction of unauthorized access to all areas of high-risk activities - Provision of specific personnel training on worksite OHS management - Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers - Any uncovered work pits should have appropriate signage and protection around them - Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before - Adequate safety signage on construction sites should be installed to alert community/drivers/pedestrians - lighting and/or reflective tapes and signage integrated in all worksites for safety at night - appropriate security measures in place to prevent harassment or kidnapping of workers - 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		Contractor
Mobilization of personnel, equipment, machinery, heavy duty vehicles for preparation of workers' camp	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/ Mitigation Actions	Responsibility for mitigation
		*Preventing overcrowding on site by following govt. established regulations on social distancing *Provide wash hand basins for proper and thorough washing to enter and leave sites *carry out regular temperature checks at the beginning and end of each working day *use of minimum required PPE (face masks, gloves and face shields etc.) *Ensure disinfecting of tools with strong disinfectant (bleach etc.) after work *Provision of an isolation center or room on site	
Use of Workers Camp	Generation of sanitary waste from worker's camp	Ensure provision of sanitary facilities on site for workers and enforce usage. Ensure usage of approved waste vendor for waste evacuation & disposal.	Contractor
trucks for sand & materials supply	Public safety, road accidents leading to injuries and fatalities	Train drivers on defensive driving Conveyance of materials to site shall be by appropriate means of transportation to prevent damage or accidents Provide road signs and flag persons to warn of dangerous conditions of conveying materials such as the water trucks	Contractor PIU Safeguards Team

Project Activity	Potential Impact	Proposed Measures/ Actions	Mitigation	Responsibility for mitigation
Excavation, grading, compaction, filling and other civil works for channelization Excavation and compaction activities through construction works will alter the soil properties including loss of valuable topsoil's 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). OHSP Ensure QA/QC control is established on inspection of materials, which are to be of best quality to • prevent defective outcomes on construction sites • Ensure workers are aware of inherent risks in use of pavement materials such as bitumen • Use of appropriate PPE to ensure risks to accidents & incidents are minimized or eliminated • Use tarpaulins to cover sand and other loose material when transported by trucks • Ensure excavation pits are used for extraction of material only for project purposes and not commercial • Ensure generators are operated by dedicated trained personnel • Carry out regular servicing of generator to reduce release of harmful emissions		Engineering Consultant/Irrigation department Environmental Safeguards Specialist Excavation and compaction activities through construction works will alter the soil properties including loss of valuable topsoil's Use of generators for power supply
Use of workers camp	Sanitation issues and public health impacts	• Provide bins on site for temporary storage of domestic waste such as lubricant containers, drinking water sachets and carrier bags/packaging materials. • Dispose all construction and domestic waste at the approved dumpsites and in the approved manner. • Ensure all trenches or excavations made during the construction works do not collect stagnant water, which could breed mosquitoes. • Ensure access to toilets for construction crew or provide temporary toilets (mobile toilets) for use where there are no existing ones. • Ensure mobile toilets/sanitary provisions are		Contractor/ Engineering Consultant Environmental Safeguards Specialist

Project Activity	Potential Impact	Proposed Measures/ Mitigation Actions	Responsibility for mitigation
		provided to reflect gender types. Ensure regular toolbox meetings are held among contractor workers to offer awareness on transmission of contagious or communicable diseases.	
Construction Machinery & Equipment Movement of materials Use of Compaction, filling & excavation 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: - Prohibition of drug and alcohol use by workers while on the job. - Provision of adequate first aid, first aiders, PPE, signage (English, Urdu, sindhi and Balochi languages). - Use only trained personnel for welding activities - Restriction of unauthorized access to all areas of high-risk activities - Provision of specific personnel training on worksite OHS management - Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers - Any uncovered work pits should have appropriate signage and protection around them - Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before - Adequate safety signage on construction sites should be installed to alert community/drivers/pedestrians - lighting and/or reflective tapes and signage integrated in all worksites for safety at night - appropriate security measures in place to prevent harassment or kidnapping of workers	Contractor
culverts, drainage basins Construction	Occupational accidents and injuries to workers and risk to community	- Ensure location is properly cordoned off before construction activities are carried out - Carry out proper levelling and setting out to ensure	Contractor

Project Activity	Potential Impact	Proposed Measures/ Mitigation Actions	Responsibility for mitigation
	health and safety Erosion Risk of erosion and flood	appropriate road gradient is achieved to prevent ponding/flooding issues • Create awareness in neighbouring communities to ensure road users are aware of road intervention work • Use of biological control measures (tree planting) with tree roots that will bind soil and reduce erosion • As much as possible, ensure community minimises movement around the site and should be informed before this type of work is carried out • Use appropriate signage along road to show work in progress • Use of flagmen to divert traffic where required • Provide side-drains to promote effective run off channelization • Crosscheck design to ensure road gradient is adequate enough to avoid backflow runoff into residences	
Channelization & construction activities	Increase in spread of Communicable diseases, STDs such as HIV/AIDS and other STIs	• Ensure access into construction site is restricted • Vaccinating workers against common and locally prevalent diseases; • Monitoring of local population health data, in particular for transmissible diseases. • Implementation of HIV/AIDS education program; • Information campaigns on STDs among the workers and local community in collaboration WITH relevant HIV/AIDS management organizations	Contractor/ 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: - Prohibition of drug and alcohol use by workers while on the job. - Provision of adequate first aid, first aiders, PPE, signage (English, Balochi, urdu and sindhi languages).	Contractor

Project Activity	Potential Impact	Proposed Measures/ Actions	Mitigation	Responsibility for mitigation
		- Restriction of unauthorized access to all areas of high-risk activities. - Provision of specific personnel training on worksite OHS management - Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers - Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before - Adequate safety signage on construction sites should be installed to alert community/drivers/pedestrians - lighting and/or reflective tapes and signage integrated in all worksites for safety at night - appropriate security measures in place to prevent harassment		
Excavation decommissioning pit	Public health	*Level out hollow area of pits to reduce ponding of water & stagnation *Revegetate area around the pit to re-introduce natural habitat formation *Planting of trees to replace felled vegetation - Maintain drainage channels to reduce water collection in hollow *Use of bricks in stagnant pond formation areas to eliminate insect breeding *Carry out burrow pit reclamation according to remediation plan		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.
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/ Mitigation Actions	Responsibility for mitigation
I. Pre-Construction Phase			
Use of Workers Camp/Site Office	Generation of sanitary waste	- Ensure provision of sanitary facilities on site for workers and enforce usage. - Ensure usage of waste management agency - approved waste vendor for waste evacuation & disposal.	Contractor
Movement of plant & equipment to and from staging area to site	Soil contamination	- Develop and implement a site- specific Waste Management Plan (WMP) - 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. - Ensure regular maintenance of vehicles to avoid leaks of oil. Prevent unregulated dumping of fuel waste - Ensure local communities are sensitized on need to avoid tampering with waste bins	Contractor
Use of workers camp/site office	Sanitation issues and public health impacts	- Provide trash bins on site for temporary storage of domestic waste such as lubricant containers, drinking water sachets and carrier bags/packaging materials. - Dispose all construction and domestic waste at the approved dumpsites and in the approved manner. - Ensure all trenches or excavations made during the construction works do not collect stagnant water, which could breed mosquitoes. - Ensure access to toilets for construction crew or provide temporary toilets (mobile toilets) for use where there are no existing ones.	Contractor/ Engineering Consultant Environmental Safeguards Specialist
		- Ensure mobile toilets/sanitary provisions are provided to reflect gender types. - Ensure regular toolbox meetings are held among contractor workers to offer awareness on transmission of contagious or communicable diseases.	

Construction work activities	Generation of construction waste including spoils, debris and concrete	• Develop and implement a site- specific Waste Management Plan (WMP) to include the following: • Ensure segregation of waste to facilitate reuse and recycling opportunities. • Ensure no burning of waste on site. • Ensure usage of approved waste vendor for • waste evacuation, processing & disposal.	Contractor
Operation of workers camp/site office prior to demobilization of facilities	Generation of sanitary waste from worker's camp	• Ensure provision of sanitary facilities on site for workers and enforce usage. • Ensure usage of approved waste vendor for waste evacuation & disposal.	Contractor
Commissioning of library & buildings	Generation of construction waste and debris	• Develop and implement a site- specific Waste Management Plan (WMP) to include the following: • Ensure segregation of waste to facilitate reuse and recycling opportunities. • Site visit at the completion of project to ensure no waste is left behind.	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
 - Travel route safety and abduction related 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 National Institute of Health (NIH) Pakistan, the Provincial Disaster Management Authority (PDMA) Balochistan, and the District Health Officer (DHO) Jaffarabad 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.
Worker induction sessions	Orientation of workers on ESMP requirements, OHS, PPE, code of conduct, emergency response, labour rights, and worker grievance procedure.

Method	Purpose
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
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

Project Stage	Stakeholders / Workers	Method	Key Topics	Frequency / Timing	Responsibility
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 laborers, 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.
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	

Item	Details
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
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 VIEW OF COMMUNITY CONSULTATION



ANNEXURE: Y

WORKPLAN / IMPLEMENTATION SCHEDULE

