SEPTEMBER 2026

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Dera Ismail Khan, Khyber Pakhtunkhwa

Activity 1.2.1
Design & Implement GI measures for Flood Risk Reduction

Sub-Activity 1.2.1.2
Construction of 3 No. Flood Protection Embankments, Paniala Cluster
Sub-Activity 1.2.1.4
Construction of 05 Gabion Bunds, Abdul Khel Cluster

Recharge Pakistan
WWF-PAKISTAN

FP207 Recharge Pakistan: Building Pakistan's resilience to climate change through Ecosystem-based Adaptation (EbA) and Green Infrastructure for integrated flood risk management

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List of Abbreviations

Abbreviation	Meaning
BOQ	Bill of Quantities
CBO	Community-Based Organization
D.I. Khan	Dera Ismail Khan
DSC	Design and Supervision Consultant
EbA	Ecosystem-based Adaptation
E&S	Environmental and Social
ESF	Environmental and Social Framework
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standard
FP	Funding Proposal
FPIC	Free, Prior and Informed Consent
GCF	Green Climate Fund
GI	Green Infrastructure
GPS	Global Positioning System
GRM	Grievance Redress Mechanism
KP	Khyber Pakhtunkhwa
KMZ	Keyhole Markup Language Zipped (Zipped version of KML)
M&E	Monitoring and Evaluation
NBS	Nature-Based Solutions
O&M	Operation and Maintenance
OHS	Occupational Health and Safety
PID	Provincial Irrigation Department
PKR	Pakistani Rupee
PMU	Project Management Unit
PPE	Personal Protective Equipment
RP	Recharge Pakistan
SEA/SH	Sexual Exploitation and Abuse/Sexual Harassment
SEP	Stakeholder Engagement Plan
SIPP	Safeguards Integrated Policies and Procedures
SIU	Site Implementation Unit
TBD	To Be Determined
WWF	World Wide Fund for Nature

Executive Summary

This Environmental and Social Management Plan (ESMP) has been prepared for Activity 1.2.1 – Design and Implement Green Infrastructure Measures for Flood Risk Reduction under the Recharge Pakistan Project and covers two priority flood risk reduction sub-activities in Dera Ismail Khan District, Khyber Pakhtunkhwa i.e., Sub-Activity 1.2.1.2 – Construction of 3 Flood Protection Embankments at Paniala and Wanda Lohani, and Sub-Activity 1.2.1.4 – Construction of 5 Gabion Bunds at Abdul Khel, Shah Hassan Khel-1, Shah Hassan Khel-2, Katta Khel, and Wanda Shahbazi.

The proposed interventions are designed to reduce flood risk, stabilize natural drainage channels, minimize soil erosion, protect agricultural land and community infrastructure, and improve the resilience of local communities to seasonal hill torrent flows. The flood protection embankments will protect vulnerable settlements and farmland from flood damage, while the gabion bunds will reduce flow velocity, trap sediment, stabilize stream channels, and enhance natural groundwater recharge. The interventions are also expected to improve ecosystem services by reducing soil erosion, enhancing sediment retention, supporting natural channel stabilization, supporting natural regeneration of riparian vegetation, and increasing the resilience of local communities to climate-induced flooding.

The proposed interventions were subject to detailed Environmental and Social Safeguards (ESS) screening in accordance with the Recharge Pakistan Environmental and Social Management Framework (ESMF) and WWF-US Safeguards Integrated Policies and Procedures (SIPP). The approved screening reports concluded that the anticipated environmental and social impacts are site-specific, localized, temporary, and readily manageable through implementation of the mitigation measures, monitoring requirements, and institutional arrangements presented in this ESMP. No significant adverse or irreversible environmental or social impacts were identified.

The principal environmental and social risks are associated with routine construction activities and include dust emissions, noise, waste generation, occupational health and safety risks, community health and safety concerns, and potential soil and water contamination resulting from improper handling of construction materials, fuels, and lubricants. No significant adverse impacts on protected areas, internationally recognized biodiversity areas, critical habitats, physical cultural resources, or involuntary resettlement are anticipated. The approved screening confirmed that the intervention sites under Gabion Bunds belongs to government Department while the sites under Flood Protection Embankments belongs to the local community and will remain theirs. and no land acquisition or physical displacement is required.

The ESMP establishes mitigation and monitoring measures to avoid, minimize, and manage identified environmental and social risks throughout the project lifecycle, including planning and design, procurement, pre-construction, construction, operation, and maintenance. It further defines institutional roles and responsibilities, environmental and social monitoring requirements, stakeholder engagement and grievance redress mechanisms, emergency preparedness and response procedures, occupational health and safety requirements, labour management provisions, and reporting arrangements to ensure effective implementation of environmental and social safeguards.

This ESMP document is structured in sections**. Section 1** provides the necessary Introduction and

Project Description, outlining the ESMP's rationale, scope, and key project details. **Section 2** establishes the project's compliance foundation by addressing the Legal Framework and Applicable Environmental and Social Safeguard Policies, which include Pakistan's national/provincial laws and the WWF Safeguards Integrated Policies and Procedures (SIPP). **Section 3** identifies the Major Risks covered under the ESMP, such as security, land tenure, and stakeholder engagement risks. **Section 4** documents the Baseline Environmental & Social Data, including details on the degraded ecosystems, the cohesive nature of the tribal communities, and the area's security situation. Dedicated plans for risk mitigation are presented in **Section 5:** outlines the primary Environmental and Social Management Plan, detailing key impacts, mitigation measures, and monitoring parameters for the implementation phase **Section 6:** focuses on Stakeholder Consultation and Engagement, covering the identified parties, the consultation process, and the ongoing engagement strategy, including the Consent process with Community elders. **Section 7**. ESMP Implementation Mechanism, Monitoring Plan & Reporting **Section 8** Security Management Plan, **Section 9** provides an overview of the structure and access channels for the project's Grievance Redress Mechanism (GRM).

The annexes and appendices attached to this ESMP form an integral part of the document and shall be implemented in conjunction with the mitigation measures, monitoring requirements, institutional arrangements, and reporting procedures described herein.

Overall, implementation of this ESMP will ensure that the proposed green infrastructure interventions are planned, constructed, operated, and maintained in an environmentally sustainable and socially responsible manner, while enhancing climate resilience and safeguarding the livelihoods and wellbeing of affected communities.

SECTION 1:

1.1 Introduction

This ESMP has been prepared to identify potential environmental and social risks and impacts associated with the proposed interventions and to define appropriate mitigation, monitoring, and institutional measures ensuring compliance with the Recharge Pakistan Environmental and Social Management Framework (ESMF), applicable national and provincial legislation, and GCF requirements. It has been informed by the approved ESS Screening Reports for the 3 Flood Protection Embankments and 5 Gabion Bunds, incorporating their identified risks, recommended mitigation measures, and conclusions to ensure consistency between the safeguard screening process and the management measures proposed herein.

This Environmental and Social Management Plan (ESMP) has been prepared for **Activity 1.2.1 – Design and Implement Green Infrastructure Measures for Flood Risk Reduction** under the Recharge Pakistan Project. The ESMP covers the following interventions in Dera Ismail Khan District, Khyber Pakhtunkhwa:

- **Sub-Activity 1.2.1.2 – Construction of 3 Flood Protection Embankments at Paniala and Wanda Lohani;** and
- **Sub-Activity 1.2.1.4 – Construction of 5 Gabion Bunds at Abdul Khel, Shah Hassan Khel-1, Shah Hassan Khel-2, Katta Khel, and Wanda Shahbazi.**

The proposed interventions are part of the Recharge Pakistan Project, which aims to enhance Pakistan's resilience to climate change through Ecosystem-based Adaptation (EbA) and Green Infrastructure (GI) for integrated flood and water resources management across the D.I. Khan, Ramak, Manchar, and Chakar Lehri watersheds. The Recharge Pakistan Project is funded by the Green Climate Fund (GCF) with a budget of US$72.9 million and is classified as a Medium Risk (Category B) project.

The proposed 3 flood protection embankments and 5 gabion bunds are nature-based green infrastructure interventions designed to reduce flood risks associated with seasonal hill torrents, stabilize natural drainage channels, minimize soil erosion and sediment transport, protect agricultural land and community infrastructure, and improve the resilience of local communities to climate-induced flooding. The principal construction activities will include surveying and site marking, excavation and earthworks, construction of gabion structures, transportation and storage of construction materials, operation of construction machinery and equipment, temporary stockpiling of excavated materials, site reinstatement, and stabilization of disturbed areas following completion of the works.

1.2 Project Description

The Recharge Pakistan project seeks to address the adverse impacts of climate change in Pakistan, which is ranked as the fifth most climate-vulnerable country. The project's primary objective is to improve floodwater and hill torrent management through EbA and green infrastructure, moving towards integrated water management plans that blend grey and green solutions to maximize community benefits and conserve the Indus Basin.

The project consists of three main components:

Component 1: Proofs of concept for EbA and green infrastructure interventions as efficient and effective solutions for flood and drought risk reduction in Pakistan.

Component 2: Enabling a paradigm shift towards EBA and Green Infrastructure in Pakistan.

Component 3: Enhanced community resilience and adoption of EbA and green infrastructure interventions in Pakistan's Indus Basin.

The project will be implemented across four sites in Pakistan: D.I. Khan and Ramak, Manchar, Chakar Lehri. WWF-Pakistan is the lead executing entity, hosting the Project Management Unit (PMU) responsible for the project's day-to-day management.

1.3 Rationale for study

This ESMP is specifically designed for **Activity 1.2.1 – Design and Implement Green Infrastructure Measures for Flood Risk Reduction**, covering **Sub-Activity 1.2.1.2 – Construction of 3 Flood Protection Embankments at Paniala and Wanda Lohani** and **Sub-Activity 1.2.1.4 – Construction of 5 Gabion Bunds at Abdul Khel, Shah Hassan Khel-1, Shah Hassan Khel-2, Katta Khel, and Wanda Shahbazi**.

The rationale for this study stems from the need to address the site-specific environmental and social issues identified during the environmental and social screening process and the engineering investigations undertaken for the proposed interventions. The primary environmental concerns include temporary dust and noise generation, soil disturbance during excavation and earthworks, localized erosion, construction waste generation, and the potential for soil and water contamination from improper handling of fuels and lubricants.

The engineering assessments concluded that the proposed flood protection embankments and gabion bunds are technically justified and effective in reducing flood risks, minimizing channel erosion, controlling sediment transport, stabilizing ephemeral stream channels, and protecting downstream agricultural land and community infrastructure. The permeable gabion bunds are designed to regulate flow velocities and retain sediment while allowing natural flow through the drainage channels, whereas the flood protection embankments are designed to safely confine and convey seasonal hill torrent flows without altering the natural drainage regime or increasing water abstraction.

Regarding the observation that the initial Environmental and Social Screening Report for the Gabion Bund interventions suggested the need for an Environmental Impact Assessment (EIA), a further regulatory review was undertaken based on the approved Environmental and Social Management Framework (ESMF), the applicable legal framework of Khyber Pakhtunkhwa, the findings of the approved Environmental and Social Screening Reports, and the final technical dimensions of the proposed structures.

In accordance with Appendix 3: Relevant Socio-Environmental Laws & Regulations of Pakistan of the approved ESMF, the proposed intervention was reviewed against the Khyber Pakhtunkhwa Environmental Protection Act, 2014 and the Khyber Pakhtunkhwa Environmental Assessment Rules, 2021, notified by the Government of Khyber Pakhtunkhwa under Section 31 read with Section 13 of the Act.

Under Schedule II (Rule 4) of the Khyber Pakhtunkhwa Environmental Assessment Rules, 2021, a full Environmental Impact Assessment (EIA) is required only for specific categories of projects. Under Section E – Water Management, Dams and Irrigation, the EIA requirement applies to dams and reservoirs that meet or exceed either of the following thresholds:

- A storage volume exceeding 50 million cubic metres, or
- A surface area of 8 square kilometres or above.

The proposed Gabion Bund interventions have been designed as localized green infrastructure

measures for flood risk reduction and temporary water retention. Collectively, the five proposed Gabion Bunds will provide an estimated temporary water storage capacity of approximately 155,200 cubic metres during flooding periods and will cover an area of approximately 50,687 square metres (0.051 square kilometres).

These values are substantially below the statutory thresholds prescribed under Schedule II of the Khyber Pakhtunkhwa Environmental Assessment Rules, 2021. Therefore, based on the nature, scale, and technical specifications of the proposed intervention, the Gabion Bunds do not trigger the requirement for preparation of a full Environmental Impact Assessment (EIA).

Furthermore, the approved Environmental and Social Screening Reports indicate that the anticipated environmental and social risks associated with the Gabion Bund interventions are localized, site-specific, temporary, and primarily related to the construction phase. The screening identified potential impacts such as temporary soil disturbance, dust generation, noise, occupational and community health and safety risks, labour-related concerns, and localized modification of water flow patterns and micro-topography. These impacts are considered predictable and manageable through appropriate mitigation and management measures and do not constitute significant, irreversible, cumulative, or large-scale environmental impacts that would warrant a full EIA.

Moreover, the screening findings do not indicate the presence of any significant environmental or social issues that would necessitate a separate EIA study. The proposed interventions are not expected to adversely affect any critical natural habitats, protected areas, ecologically sensitive ecosystems, cultural heritage resources, or socially sensitive landscapes. The screening confirmed that the anticipated impacts are limited in extent, temporary in duration, and can be effectively managed through the prescribed mitigation measures. As such, no critical environmental or social receptors have been identified that would require a more comprehensive assessment through an EIA process.

Accordingly, the earlier reference to an EIA in the screening report should be considered in light of the subsequent regulatory review and confirmation of the final design parameters. Based on the applicable legal requirements, the scale and nature of the proposed intervention, and the findings of the approved screening reports, the appropriate safeguard instrument for the intervention is a site-specific Environmental and Social Management Plan (ESMP) supported by the necessary engineering assessments and mitigation measures.

The determination that a separate EIA is not required does not exempt the intervention from environmental and social due diligence requirements. On the contrary, all identified environmental and social risks will continue to be managed through the approved ESMP, engineering assessments and design justifications, occupational health and safety measures, labour management procedures, stakeholder engagement and consultation processes, community consent arrangements, gender-based violence (GBV) and SEA/SH risk mitigation measures, grievance redress mechanisms, and regular monitoring and reporting requirements under the Recharge Pakistan Project's Environmental and Social Safeguards Framework. The mitigation measures, management plans, and monitoring requirements incorporated within the ESMP are considered appropriate and sufficient to safeguard the environmental and social aspects of the proposed Gabion Bund interventions and their locations throughout the project lifecycle. Accordingly, both the regulatory assessment and the approved environmental and social screening findings support the conclusion that the proposed Gabion Bund interventions do not require the preparation of a separate Environmental Impact Assessment (EIA).

This ESMP provides a framework to avoid, minimize, and mitigate anticipated environmental and social impacts across the planning, procurement, construction, operation, and maintenance phases of the proposed interventions, while promoting environmentally sustainable implementation and enhancing ecosystem services and long-term watershed resilience. It serves

as a practical tool for the PMU, Irrigation Department, Design and Supervision Consultant, contractors, and other implementing partners throughout the project lifecycle. The need for this ESMP is reinforced by the approved ESS Screening Reports for 3 flood protection embankments and 5 gabion bunds, which confirmed that despite the substantial long-term environmental and social benefits expected, temporary construction-related impacts require systematic mitigation, monitoring, and institutional oversight to ensure compliance with applicable safeguard requirements.

1.4 Scope of ESMP

This ESMP outlines the principles, procedures, and mitigation measures to address the potential environmental and social impacts associated with the design, procurement, pre-construction, construction, operation, and maintenance of **3 Flood Protection Embankments at Paniala and Wanda Lohani** and **5 Gabion Bunds in the Abdul Khel Cluster** under Activity 1.2.1 of the Recharge Pakistan Project. The ESMP has been prepared in accordance with the applicable laws and regulations of Pakistan, the Recharge Pakistan Environmental and Social Management Framework (ESMF), and the Safeguards Integrated Policies and Procedures (SIPP) of WWF-US.

The scope of this ESMP includes:

1.4.1 Environmental Scope:

- Preparation and implementation of a Construction Waste Management Plan for the safe handling, storage, reuse, and disposal of excavated material, construction waste, and other debris.
- Provision of detailed erosion and sediment control measures by the Contractor in accordance with the approved engineering design, including protection of embankment slopes, gabion bund foundations, and disturbed areas during construction.
- Adoption of measures to control dust, noise, and air emissions, and to prevent contamination of nearby drainage channels through proper management of fuels, lubricants, and construction materials.
- Provision of adequate sanitation and latrine facilities for construction workers to avoid environmental contamination.
- Implementation of worker health and safety measures, including provision of appropriate personal protective equipment (PPE) and training on site-specific and local hazards.

1.4.2 Social Scope:

- Conduct stakeholder consultations prior to construction and maintain regular engagement with affected communities throughout project implementation.
- Management of occupational health risks, including heat stress, exposure to dust, noise, communicable diseases, exposure to local fauna and common regional illnesses such as malaria and diarrhea, particularly for non-local workers.
- Implementation of worker health and safety protocols, including provision of appropriate safety equipment and training on site-specific and local hazards.
- Ensure that all construction sites are properly secured through installation of warning signs, barricades, and restricted access measures to protect nearby communities (if

any).Mandatory GBV/SEAH training plan for local government officials, the engineering firm, local workers, and other relevant stakeholders. Development and implementation of Security Management Plan to address site-specific security risks during project execution.

- Implementation of Grievance Redress Mechanism (GRM) accessible to workers and affected communities.

1.5 Methodology Applied

The methodology utilized for conducting an environmental and social assessment to prepare for this ESMP is as follows:

Desk Review: A comprehensive review of project documents, including the Funding Proposal (FP), Recharge Pakistan Environmental and Social Management Framework (ESMF), WWF-US Safeguards Integrated Policies and Procedures (SIPP), engineering design reports (DPRs), and other relevant environmental and social safeguard policies.

Environmental and Social Screening was conducted for the proposed interventions and the screening findings were reviewed and approved by the competent authorities. The approved findings together with relevant engineering designs, baseline information, stakeholder consultations and applicable safeguard requirements were used as the basis for preparing and refining this ESMP including the identified risks, mitigation measures, monitoring requirements and institutional responsibilities.

- Technical, hydrological, hydraulic, and engineering assessments were undertaken by the engineering design consultancy firm to assess the suitability, design requirements, and environmental considerations of the proposed interventions including their hydrological performance, erosion control, sediment management and technical soundness. Prior to preparation of this ESMP, WWF-Pakistan and the Design and Supervision Consultant, through the SIU D.I. Khan, conducted comprehensive stakeholder consultations for the proposed 3 flood protection embankments and 5 gabion bunds, engaging the Irrigation Department, district and tehsil administration, local CBOs and community leaders across the beneficiary communities of Paniala, Wanda Lohani, Katta Khel, Abdul Khel, Shah Hassan Khel and Wanda Shahbazi. These consultations disseminated project information, including ES impacts, site-specific concerns, appropriate mitigation measures, informed refinement of engineering designs and incorporation of stakeholder feedback in culturally appropriate, inclusive and locally acceptable manner.

- The findings of the environmental and social screening and engineering assessments were discussed during stakeholder consultations to identify key concerns related to channel erosion, sediment transport, construction-related disturbances, occupational health and safety, community safety, and these findings were incorporated into the engineering designs and the mitigation measures presented in this ESMP.

- Intervention sites were selected following engineering investigations, environmental and social screening, and stakeholder consultations to minimize impacts on settlements, land, and existing infrastructure while maximizing flood risk reduction and ecosystem restoration benefits, with land access on government-owned land verified during planning and community consultations undertaken to confirm local support and facilitate conflict-sensitive implementation in accordance with the Recharge Pakistan

ESMF and WWF-US SIPP. The consultation process established the basis for continued stakeholder engagement throughout the project lifecycle. Community-Based Organizations (CBOs), Community elders, and relevant government departments will continue to be engaged during implementation to facilitate effective communication, community participation, and timely resolution of project-related issues Regular engagement will be undertaken as per Community Consultation Plan- Section -6

SECTION 2: LEGAL FRAMEWORK AND APPLICABLE ENVIRONMENTAL AND SOCIAL SAFEGUARD POLICIES

This activity is governed by the national and provincial laws of Pakistan and the safeguard policies of WWF. Where discrepancies exist, the more stringent standards of the WWF SIPP shall prevail. The environmental and social safeguard requirements presented in this section have been applied through the project-specific Environmental and Social Safeguards (ESS) Screening Reports prepared and approved for the 3 Flood Protection Embankments and 5 Gabion Bunds. The findings of these screening reports have informed the mitigation measures, monitoring requirements, and institutional arrangements presented in this ESMP.

2.1 Applicable Legal and Regulatory Framework (Pakistan):

- **Environmental Protection:** The Khyber Pakhtunkhwa (KP) Environmental Protection Act, 2014, provides the primary legal basis for environmental protection, requiring assessments for projects that may cause adverse environmental effects.
- **Water Resources:** Water is a provincial subject, governed by frameworks like the KP Canal and Drainage Act (2015) that manage hill torrents. This ESMP has been designed to ensure alignment with these local water governance systems.
- **Human Resource Recruitment:** The project will ensure that the selected contractor complies with the applicable Khyber Pakhtunkhwa Revenue Authority (KPRA) requirements for the recruitment and hiring of workers, in accordance with the project's procurement requirements and applicable labor laws and regulations.
- **Labor and Working Conditions:** The project must adhere to the KP Industrial and Commercial Employment (Standing Orders) Act, 2013, and the KP Occupational Safety and Health Act, 2022, ensuring fair wages, safe working conditions, and prohibiting child labor. Mitigation measures ensure adherence to these labor laws.
- **Land and Community Rights:** While no private land acquisition is planned, any temporary use of communal land ('Shamillat') must respect customary tenure and community rights. As per Drainage Act, Gabions bands are on state-land hence only NoC from Irrigation Department is required while flood protection embankments in Wanda Lohani are on communal lands so Terms of Partnership (ToP) has been signed between Irrigation department and local community and is made part of this ESMP.

2.2 Applicable Environmental & Social Standards (WWF-SIPP):

The environmental and social screening undertaken for the proposed flood protection embankments and gabion bunds has identified the following applicable WWF-US Safeguards Integrated Policies and Procedures (SIPP):

- **Standard on Protection of Natural Habitats:** Triggered due to construction activities within ephemeral drainage channels and hill torrent environments, which may temporarily disturb natural vegetation, stream banks, and associated habitats. Appropriate mitigation measures have been incorporated to minimize disturbance and restore temporarily affected areas following construction.

- **Standard on Labour and Working Conditions:** Triggered due to the engagement of contractors and construction workers, requiring implementation of occupational health and safety measures, fair labour practices, provision of appropriate Personal Protective Equipment (PPE), and compliance with applicable labour legislation.
- **Standard on Community Health, Safety, and Security:** Triggered by the inherent risks of construction (excavation, use of heavy materials), potential for worker exposure to local diseases (malaria), and general security concerns in the D.I Khan region.
- **Standard on Grievance Redress Mechanism:** The Project Grievance Redress Mechanism (GRM) is fully functional and socialized with current stakeholders. It will be fully socialized with all new stakeholders, including temporary workers, contractors and laborers.
- **Standard on Stakeholder Engagement:** Transparent and inclusive stakeholder Engagement with all the relevant stakeholders so far conducted and will continue as such throughout the implementation of intervention as per stakeholder engagement plan (Appendix-6)

SECTION 3: MAJOR RISKS COVERED UNDER THIS ESMP

This ESMP addresses the significant environmental, social, occupational health and safety, and hazard risks identified through the environmental and social screening process for the proposed **Construction of 3 Flood Protection Embankments at Paniala and Wanda Lohani** and **Construction of 5 Gabion Bunds at Abdul Khel, Shah Hassan Khel-1, Shah Hassan Khel-2, Katta Khel, and Wanda Shahbazi** under Activity 1.2.1 of the Recharge Pakistan Project.

3.1 Environmental Risks:

- **Soil Erosion and Land Instability:** Excavation, earthworks, and construction activities associated with the flood protection embankments and gabion bunds may result in localized soil erosion, slope instability, and sediment movement, particularly during rainfall events if exposed surfaces are not adequately protected.
- **Operational Phase Risks of Gabion Bunds:** The proposed gabion bunds are designed as erosion control and flow regulation structures that reduce runoff velocity, stabilize ephemeral stream channels, and retain sediment while allowing controlled passage of water through their permeable structure. The gabion bunds have been designed to safely convey the design flood discharge, and the likelihood of structural failure is considered low provided routine inspection and maintenance are undertaken by the Irrigation Department KP during the Project period and after Project completion, in accordance with its established O&M arrangements and annual O&M budgets as reflected in Section 5. As the structures are permeable, they are not intended to create permanent water storage or alter the natural drainage regime.
- **Operational Phase Risks of Flood Protection Embankments:** The proposed flood protection embankments are designed to safely confine and direct seasonal hill torrent flows, thereby reducing flood risks to nearby settlements, agricultural land, and community infrastructure. Potential operational risks include localized erosion of embankment slopes, erosion/undercutting at vulnerable locations, or damage resulting from extreme flood events exceeding the design capacity. These risks will be managed through routine inspection, timely maintenance, and prompt repair of any erosion or structural damage.
- **Sediment Transport:** Earthworks and excavation activities may temporarily increase sediment runoff into nearby drainage channels if exposed soil surfaces are not adequately protected. Appropriate erosion and sediment control measures shall be implemented throughout construction to minimize sediment transport and maintain downstream water quality.
- **Improper Waste Management:** Construction waste, excavated material, discarded gabion wire, packaging materials, and domestic waste from workers may degrade the surrounding environment if not properly managed. Detailed procedures for handling, segregation, storage, reuse, transportation, and disposal of construction and hazardous waste are provided in the Waste Management Plan (Annex 2).

A comprehensive Operation and Maintenance Plan will be implemented following construction. The plan will include routine inspections before and after the monsoon season, inspection and maintenance of embankments and gabion bunds, repair of erosion or structural damage where required, removal of debris obstructing drainage channels, and periodic maintenance to ensure performance and sustainability of the flood protection and erosion control structures. The 5 gabion bunds are also expected to generate long-term environmental benefits by reducing channel erosion, enhancing sediment retention, supporting groundwater recharge, and improving the stability of seasonal drainage systems. Routine inspection and maintenance will ensure that

these ecosystem functions are maintained throughout the operational life of the structures.

3.2 Social Risks:

• **Community and Tribal Conflict:** Perceived inequity in employment opportunities, distribution of project benefits, or engagement of outside labour may give rise to community concerns if not managed through transparent GRM consultation and communication.

• **Community Health and Safety:** Construction activities involving excavation, movement of heavy machinery, transportation of materials, and operation of equipment may pose temporary safety risks to nearby residents if work areas are not adequately secured.

• **Security Risks:** The D.I Khan region has a volatile security situation, with a history of terrorist attacks, posing a risk to the safety of project team and local communities,

Labor-related risks associated with recruitment, working conditions, compensation for over-time work, non-discrimination, prohibition of child and forced labor, and worker grievance mechanisms shall be managed through implementation of the Labor Management Procedure (Annex 9), aligned with Khyber Pakhtunkhwa Payment of Wages Act, 2013

3.3 Occupational Health and Safety (OHS) Risks:

- **Construction Hazards:** Workers may be exposed to risks associated with excavation, earthworks, handling and placement of stones and gabion baskets, operation of heavy machinery, and construction of flood protection embankments.
- **Health Risks:** Workers may be exposed to dust, excessive heat, noise, communicable diseases, and venomous fauna such as snakes and scorpions that are common in semi-arid environments.
- **Exposure to Dust and Airborne Particles:** Earthworks and material handling may expose workers to dust and airborne particulates without appropriate control measures.
- **Inadequate Personal Protective Equipment (PPE) and Safety Training**: Failure to provide appropriate PPE, site induction, and regular safety training may increase the likelihood of workplace accidents and injuries.

3.4 Hazard Risks:

Construction-phase hazards include accidents from excavation, machinery-related accidents, poor maintenance, or inadequate traffic management and extreme weather events that may create unsafe working conditions or damage partially completed works and post-flood structural assessment before affected structures are returned to service. Emergency preparedness, response procedures, communication protocols, and institutional responsibilities for these situations are detailed in the Emergency Preparedness and Response Plan (Annex 10).

SECTION 4: BASELINE ENVIRONMENTAL & SOCIAL DATA

4.1 Environmental Baseline:

The proposed intervention sites are located within the **Ramak and Paniala watersheds** of Dera Ismail Khan (D.I. Khan) District, Khyber Pakhtunkhwa, and comprise the construction of **3 Flood Protection Embankments at Paniala, Wanda Lohani, and Katta Khel**, and **5 Gabion Bunds at Abdul Khel, Shah Hassan Khel-1, Shah Hassan Khel-2, Katta Khel, and Wanda Shahbazi**. The area is characterized as a **Hill Torrent** landscape.

4.1.1: Soil and Land Stability Services

The project area is characterized by highly dynamic seasonal hydrology, where short-duration, high-intensity rainfall events generate flash floods carrying significant sediment loads. These natural processes contribute to channel migration, bank erosion, and localized flooding, creating recurring risks to agricultural land, rural infrastructure, and nearby settlements. The proposed flood protection embankments have been designed to reduce these risks while maintaining the natural conveyance of seasonal hill torrent flows. The natural drainage system consists of ephemeral hill torrent channels that carry runoff only during and immediately after rainfall events. These seasonal drainage systems also perform important ecological and hydrological functions by facilitating groundwater recharge, sediment deposition, and natural stabilization of drainage channels. The proposed gabion bunds have been designed to enhance these ecosystem functions while reducing excessive erosion and downstream sediment transport. Land use in the project area is predominantly rain-fed agriculture and livestock grazing, with sparse natural vegetation typical of semi-arid environments.

Temporary construction-related disturbances will be minimized through implementation of the environmental and ecological management measures outlined in this ESMP, including protection of native vegetation, restoration of disturbed areas, and ecological monitoring during construction and operation. The dominant natural vegetation consists of drought-tolerant grasses, shrubs, and scattered native tree species that contribute to soil stabilization and provide seasonal habitat for local fauna. While no rare or endangered species were identified during project screening, unnecessary vegetation clearance will be avoided wherever practicable.

4.2 Social Baseline:

The proposed interventions will benefit the communities of **Paniala, Wanda Lohani, Katta Khel, Abdul Khel, Shah Hassan Khel, and Wanda Shahbazi** in Dera Ismail Khan District. Based on the project screening and community consultations, these interventions are expected to directly benefit approximately **6100 households**, comprising an estimated population of **39650 people**, with relatively low literacy levels, particularly among women. The communities are predominantly communal and rely on agriculture and livestock for their livelihoods, making them highly vulnerable to seasonal hill torrent flooding, soil erosion, and damage to productive land and local infrastructure.

4.2.1: Landownership:

Landownership confirmation prior to implementation of the proposed interventions is critical to avoid potential social or community conflicts between the provincial implementing stakeholders and the communities or institutions holding ownership rights over the land required for the interventions. Accordingly, landownership is initially identified and documented during the ES

Screening process, followed by verification of the relevant landownership records by the Irrigation Department KP prior to implementation.

The ES Screening for the 5 Gabion Bunds and 3 Flood Protection Embankments confirmed that the land required for 4 Gabion Bunds is owned by the Forest Department, Government of Khyber Pakhtunkhwa, while the land required for the 3 Flood Protection Embankments is owned by local communities/private landowners.

For the 04 Gabion Bunds located on Forest Department land, the Forest Department KP has provided the required No Objection Certificate (NOC) for construction. The NOC includes provisions regarding the preparation and implementation of an Operation and Maintenance (O&M) Plan and the provision of financial resources for O&M of the gabion bunds. The Irrigation Department KP has provided its response confirming its commitment to fulfilling these requirements. The Forest Department NOC and the corresponding response from the Irrigation Department KP are provided in Annex 7.

The plantation plan along the gabion bunds has also been incorporated into the Gabion Bund Design Report and will be implemented in accordance with the approved plan. The plantation plan is provided in Annex 11, while the relevant implementation and mitigation measures are incorporated in Section 5 of this ESMP.

For the 3 Flood Protection Embankments, the ES Screening confirmed that the required land is owned by the local community/private landowners. To formalize land access and community consent for implementation, Terms of Partnership (ToP) Deeds have been duly executed between the Project Director, Recharge Pakistan, Irrigation Department, Khyber Pakhtunkhwa, and the respective private landowners. The ToP Deeds were executed on 5 September 2026 for the following works:

1. Package-I: Construction of Flood Protection Embankment at Paniala, District D.I. Khan; and
2. Package-II: Construction of 2 Flood Protection Embankments at Wanda Lohani, District D.I. Khan.

The Irrigation Department KP has formally communicated the execution of these ToP Deeds for incorporation into the relevant ESMP documentation. Copies of the executed ToP Deeds and the corresponding Irrigation Department KP letter are provided in Annex 7.

Accordingly, the landownership and land-access arrangements for all 5 Gabion Bunds and 3 Flood Protection Embankments have been verified and documented prior to implementation, with the relevant ownership records, NOCs, ToPs, and supporting correspondence attached to this ESMP as annexes.

SECTION 5: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

This table outlines the key impacts, mitigation measures, and monitoring plan for each phase of Activity 1.2.1 – Design and Implement Green Infrastructure Measures for Flood Risk Reduction, covering Sub-Activity 1.2.1.2 – Construction of 3 Flood Protection Embankments at Paniala and Wanda Lohani and Sub-Activity 1.2.1.4 – Construction of 5 Gabion, structured under the main categories of the Implementation Plan and Monitoring Plan.

Phase / Aspects	Implementation Plan			Monitoring Plan			Budget/ costs In PKR
	Environmental and Social Impacts	***Proposed Mitigation Measures***	***Responsibility***	***Monitoring Parameters***	***Frequency***	***Responsibility***	***Compliance Criteria***
Landownership and Access	**Land ownership, land access and potential community/institutional conflicts:** Implementation on land without verified ownership or documented consent may result in disputes, delays, or conflicts with Forest Department or private/community landowners.	• Verify and document land ownership before commencement of each intervention. • For **4 Gabion Bunds on Forest Department land**, ensure compliance with the Forest Department KP NOC, including preparation and implementation of the required O&M Plan and provision of O&M resources. • For **3 Flood Protection Embankments on private/community land**, maintain the duly executed **Terms of Partnership (ToP) Deeds dated 05 September 2026** with respective landowners as evidence of consent and land access. • Do not commence works where ownership, NOC, or land-access arrangements are not verified and documented. • Maintain all ownership records, NOCs, ToPs and supporting correspondence with the ESMP.	Irrigation Department KP / PMU-SIU	• Verified landownership records available. • Forest Department NOC available and conditions addressed. • Executed ToP Deeds available for 03 FPEs. • Evidence of compliance with NOC/O&M requirements. • Land-related grievances/disputes.	**Prior to implementation; and monitored throughout construction**	Irrigation Department KP / PMU-SIU	• Ownership verified and documented for all intervention sites. • Required NOCs and ToPs duly executed and available. • No works initiated without confirmed land access/consent. • NOC and ToP conditions complied with. • No unresolved landownership/access disputes attributable to the project.	

Procurement and Design Phase								
Procurement and Design Phase	- Risk of unnecessary land disturbance beyond approved design limits. • Soil erosion and sedimentation risks, particularly during monsoon seasons. - Damage to adjacent land, sensitive areas and community access. - Soil compaction. - Weak accountability on erosion and control implementation.	**Restricted Work Zones:** • Clearly define and demarcate the footprint of the proposed flood protection embankments and gabion bunds in the approved engineering drawings. • Restrict all construction activities to the approved project footprint. **Protect adjacent lands through marking and physical demarcation.** **Construction Planning**: • Schedule major earthworks, excavation, and gabion installation outside the peak monsoon season, where practicable. • Identify approved haul routes, material storage areas, and spoil disposal locations during the design stage. • Minimize vegetation clearance and avoid unnecessary disturbance to natural drainage channels **Machinery Movement Control**: Designate and approve specific haul and access routes in project layout and prohibit deviation from approved plans. Include route compliance requirements in contractor bidding	Provincial Irrigation Department (PID), Engineering Design Consultancy Firm and Contractor. - Provincial Irrigation Department (PID), - Engineering Design Consultancy Firm and Contractor. - Approved haul route maps in design - Provincial Irrigation Department (PID), - Engineering Design Consultancy Firm and Contractor	- Approved engineering drawings showing project limits. Approved construction schedule reflecting seasonal consideration. Verification that ESMP annexes and safeguard requirements are incorporated into contract documents. - Erosion control measures incorporated in BOQs and technical specification in Tender Documents	- Once during design finalization and prior to tender approval	- Provincial Irrigation Department (PID) Environmental & Social Focal Person - Contractor is responsible to fence the area during the construction period Contractor Design consultant Firm SIU NbS team Officer M & E/ESS	- Design documents clearly show restricted work boundaries - BOQs include erosion control provisions - Seasonal scheduling reflected in work plan Compliance with ESMP requirements	The cost is covered under the overall cost allocated for Design & Implementation of these sub-activities.

documents.

Phase / Aspects	Implementation Plan			Monitoring Plan				Budget/ costs In PKR
	Environmental and Social Impacts	***Proposed Mitigation Measures***	***Responsibility***	***Monitoring Parameters***	***Frequency***	***Responsibility***	***Compliance Criteria***	
Social Mobilization	**Risk of GBV/SEAH** by project-associated personnel affecting community members, particularly women and girls, during mobilization and construction.	Mandatory GBV/SEAH induction training, delivered **before site mobilization**, for project-associated stakeholders with community contact. Training to cover the WWF Gender Policy, WWF statement of principle on Gender Equality prohibition of SEAH, survivor-centered GRM referral pathway, and reporting channels.	Contractor, Design & Supervision Consultant, Provincial Irrigation Department	-% of engaged personnel trained; -training attendance sheets/records.	-Pre-mobilization (mandatory, one-time per individual) .	Design and Supervision Consultant, Irrigation Department, SIU D.I Khan, PMU-WWF	-100% of personnel trained -no site access granted without proof of training; -records available for PMU/SIU audit at any time.	
Construction Phase								
Site Preparation & Excavation	- **Dust Pollution:** from excavation and vehicle movement. - **Noise Pollution:** from machinery and equipment.	- Regular water sprinkling on haul roads and excavation sites. - Ensure all Machinery has functional silencers. - Provide dust masks to all workers and nearby community members if necessary.	- Contractor	-Visual dust monitoring -Use of PPEs by Workers. -Noise level checks.	- Daily	-SIU ESS/M&E Officer	- No visible dust plumes. - All workers using PPE.	As per tender documents Contractor is responsible for the PPEs items wise specification are attached as **Annex-1)**
	Chance Find: Accidental discovery of archaeological, historical, religious, cultural heritage resources, artifacts, structures, inscriptions or other culturally significant materials. Potential damage. Loss or disturbance of	Implement Chance Find procedure in accordance with IFC Performance standard 8, Recharge Pakistan ESMF and applicable national legislation. Secure and protect the sites from damage, theft or disturbance using barriers and exclusion zones. Notify the Construction Supervision Consultant, and the relevant Government Archaeology/	Contractor, Irrigation department, Design & Supervision Consultant.	Number of chance find reported. Notifications submitted to relevant authorities Chance find record Forms completed	Monthly during all excavation and earthwork activities.	Contractor, Design & Supervision Consultant, Irrigation Department.	No disturbance or removal of cultural heritage without authorization. All chance finds documented and reported Compliance with IFC PS8, Recharge Pakistan ESMP	

	cultural heritage resources due to construction activities.	Cultural Heritage Authority. Record the Location, photographs, date and description of the find. Do not remove, clean or disturb the find unless authorized by the competent authority. Maintain records of all of the chance finds and include them in monthly monitoring reports.	Written clearance obtained before recommencement of works. Documentation included.	and applicable national cultural heritage regulations.

Phase / Aspects	Implementation Plan			Monitoring Plan				Budget/ costs In PKR
	Environmental and Social Impacts	***Proposed Mitigation Measures***	***Responsibility***	***Monitoring Parameters***	***Frequency***	***Responsibility***	***Compliance Criteria***	
Plan for Prevention of Land Erosion and Soil Disturbance								
Construction Phase – Earthworks, Excavation and Embankment Construction	- Soil erosion, slope instability, and sediment movement due to excavation, earthworks, and construction activities.	- Restrict excavation and earthworks to approved design limits. - Compact embankment fill in controlled layers as per design specifications. - Provide stone pitching, riprap, or gabion protection where specified in design. - Stabilize disturbed surfaces immediately after construction. - Schedule earthworks to minimize exposure during rainfall periods. - Implement the Land Erosion Prevention Plan (Annex 3).	-Contractor (Provincial Irrigation Department)	- Stability of embankment slopes and gabion structures - Evidence of erosion or slope failure. - Condition of disturbed areas.	- Weekly during construction	KP Irrigation Department, DSC, SIU NBS Team, ESS Team	- No significant erosion or slope failure. - Stable embankments without cracks or collapse. - Disturbed areas stabilized. - Construction confined to approved design limits.	
Construction Phase – Flow Management	- Temporary obstruction or diversion of natural drainage during construction. - Increased sediment transport and localized erosion if construction is improperly sequenced.	- Construct flood protection embankments and gabion bunds according to the approved engineering drawings and construction sequence. - Maintain natural drainage pathways throughout construction wherever practicable. - Remove temporary obstructions	- Contractor (Provincial Irrigation Department)	- Condition of drainage channels. - Evidence of erosion/ undercutting or erosion. - Structural stability of embankment and gabion bunds.	-Monthly and after significant rainfall events	- KP Irrigation Department, DSC, SIU NBS Team, ESS Team	- Natural drainage maintained. - No significant erosion/ - undercutting or uncontrolled erosion. - Flood protection embankments and gabion bunds remain structurally	- Included in the approved design and BOQ.

		immediately after completion of works. - Inspect structures following rainfall events and repair any erosion or erosion/undercutting without delay. - Suspend construction activities where severe rainfall or flash flood warnings have been issued.					stable.

Waste Management Plan for Flood protection embankments and Gabion Bunds

Phase / Aspects	Implementation Plan			Monitoring Plan				Budget/ costs In PKR
	Environmental and Social Impacts	***Proposed Mitigation Measures***	***Responsibility***	***Monitoring Parameters***	***Frequency***	***Responsibility***	***Compliance Criteria***	
Construction Phase – Excavation &Earthworks	- Improper disposal of excavated soil causing land degradation, dust generation obstruction of drainage paths, and visual impacts.	- Reuse suitable excavated material for embankment construction, backfilling, or site grading wherever feasible. - Disposal of surplus unsuitable material only at approved disposal locations. - Stabilize spoil heaps and prevent sediment runoff into drainage channels. - Restore disposal areas after completion of works. - Implement the Waste Management Plan (Annex 2).	- Contractor (Provincial Irrigation Department)	- Quantity of reused vs. disposed soil Condition of soil disposal sites	- Weekly	- KP Irrigation Departme nt, DSC, SIU NBS Team, ESS Team	- No unauthoriz ed dumping. - Approved disposal sites used. - Spoil heaps stabilized following constructi on.	-

Construction Phase – Site Clearance	- Generation of stones, surplus soil, wire mesh cuttings, and construction debris causing visual nuisance and environmental degradations.	- Segregate excavated soil, stones, , scrap wire, and other construction waste at source. - Reuse suitable stones and excavated material wherever applicable. - Dispose of surplus material only at approved disposal locations. - Restore temporarily disturbed areas upon completion of works.	- Contractor	- Waste segregation records - Cleanliness of site - Disposal records	- Weekly	- KP Irrigation Department, DSC, SIU NBS Team, ESS Team	- Proper segregation and disposal - No uncontrolled waste accumulation and dumping. - Site maintained in clean condition.	-
Construction Phase – Construction Activities	- Generation of damaged construction materials including broken concrete, surplus aggregate, damaged gabion wire, packaging materials, and other construction waste.	- Segregate reusable and non-reusable construction materials. - Reuse suitable materials wherever feasible. - Store recyclable materials separately. - Dispose of non-recyclable materials through approved disposal facilities or locations identified by the local administration.	- Contractor	- Storage condition of constructio n waste. - Waste Disposal records. - Site houseke eping.	- Monthly	- KP Irrigation Department, DSC, SIU NBS Team, ESS Team	- No mixing with domestic waste - Disposal at authorized facilities	-
Construction Phase – Labor Camps	- Domestic solid waste and wastewater generation leading to unhygienic conditions and environmental pollution.	- Provide adequate covered waste bins at labor camps. - Segregate biodegradable and non-biodegradable waste. - Arrange regular collection and disposal through the local municipal system or approved disposal locations. - Provide adequate sanitation facilities and	- Contractor	- Availability and condition of waste bins. -Cleanliness of labor camps. - Waste segregation practices. -Condition of sanitation facilities.	- Continuous/ Weekly	- KP Irrigation Department, DSC, SIU NBS Team, ESS Team - SIU NBS Team, ESS Team	- Clean camps - Proper segregation and disposal. - Functional sanitation facilities. - No uncontrolled waste accumulation.	-

		maintain good housekeeping at labour camps. - Prohibit open burning of waste.					

Phase / Aspects	Implementation Plan			Monitoring Plan			Budget/ costs In PKR
	Environmental and Social Impacts	***Proposed Mitigation Measures***	***Responsibility***	***Monitoring Parameters***	***Frequency***	***Responsibility***	***Compliance Criteria***
Construction Phase – Equipment Operation & Maintenance	- Soil and water contamination from fuel, lubricants, hydraulic oil, and accidental spills during equipment operation and refueling.	- Refuel and service machinery only at designated locations away from natural drainage channels. - Store fuels and lubricants in secure areas. - Maintain spill kits at all refueling and maintenance locations. - Immediately contain and clean any spills and dispose of contaminated material at approved locations.	- Contractor	- Availability of spill kits. - Evidence of spills or leaks. - Fuel storage condition. - Housekeeping around refueling areas.	- Continuous/ Weekly	KP Irrigation Department, DSC, SIU NBS Team, ESS Team	- No visible oil or fuel contamination. - Spill response equipment available and functional. - Refueling conducted only at designated locations.	-
Construction Phase – Machinery Servicing	- Generation of hazardous waste including used oil, oil filters, grease, oily rags, and empty lubricant containers. Hazardous waste from used oil filters, and rags.	- Collect hazardous waste separately in sealed and labelled containers. - Dispose of through authorized handlers or in accordance with local regulatory requirements. -	- Contractor	- Storage condition of hazardous waste - Disposal records. -	- Monthly	- KP Irrigation Department, DSC, SIU NBS Team, ESS Team	- Compliance with hazardous waste guidelines. - Hazardous waste properly labelled and stored. - Disposal records maintained.	-

Construction Phase – Community Conflict	Potential for community grievances or internal social conflict due to temporary disruption of access to agricultural land, grazing areas, and local pathways during construction, as well as perceived inequity in local employment opportunities and distribution of project benefits.	-Maintain access to agricultural land, grazing areas, and local pathways as far as practicable during construction; inform affected communities in advance of temporary access restrictions; ensure transparent and equitable opportunities for local employment; communicate project benefits and implementation arrangements clearly to avoid misunderstandings or perceptions of unequal treatment; and record and address any concerns or grievances through continued stakeholder engagement and the Project GRM.	Irrigation Department KP, Design consulting firm Contractor, CBO/Community Representatives	Access maintained; community concerns/grievances recorded and addressed; transparency in local employment opportunities; evidence of community consultation and communication.	Continuous during construction; reviewed monthly	Irrigation department, Forest KP,WWF-Pakistan	No unnecessary or prolonged restriction of access; employment opportunities communicated transparently; community concerns addressed in a timely manner; grievances recorded and managed through the GRM.
Criminal Activities	Security risks, including theft, intimidation, or unauthorized access to project personnel, equipment, and materials in remote intervention areas.	- Coordinate with local administration, law enforcement agencies, community representatives, and VDCs/WUGs prior to field activities. Restrict work to daylight hours, maintain a site visitor log, secure equipment and materials, and promptly report any security incidents through the project reporting and GRM mechanisms	contractor / Implementing Partner / WWF-Pakistan	Number of security incidents reported; evidence of coordination with local authorities and communities; availability of incident records and corrective actions	Monthly throughout the implementation period	Contractor / WWF-Pakistan / SIU	No major security incidents affecting project activities; security incidents documented, reported, and addressed in accordance with the Security Management Plan

Construction Phase - Ecological Plan	Loss/disturbance of existing vegetation and increased risk of soil erosion around the gabion structure during and after construction.	• Minimize disturbance to existing vegetation during construction. • Undertake plantation within 200 ft upstream and downstream of the gabion structure and along both sides. • Use locally suitable indigenous and drought-resistant species, with emphasis on Saccharum munja and Dhaman grass for erosion control and slope/bank stabilization; other suitable species may include Kikar, Farash, Jand, Ber and Pilu .• Water newly planted areas after plantation and during dry periods, particularly in the first growing season. • Replace dead/weak plants during the first two years .• Protect plantation from grazing through thorn fencing, brushwood barriers or stone alignments, in coordination with local communities .• Undertake first-year weeding, annual pruning and feasible moisture-conservation measures such as micro-catchments, shallow contour trenches or organic mulch .• Maintain photographic and plantation records.	Contractor / Implementing Agency, with supervision by Environmental/Safeguards staff and coordination with relevant Forest staff and local community	• Plantation area and species planted • Plant survival and health • Dead-plant replacement • Condition of grazing protection • Vegetation cover and soil/slope stability • Watering and maintenance records • Photographic records	• During plantation • At 3 and 6 months after plantation • Bi-annual during first two years • Annual maintenance	• Plantation completed within the designated 200 ft upstream/downstream area and along both sides. •Indigenous/drought-resistant species used as planned. • Dead/weak plants replaced during first two years. • Adequate watering and maintenance provided during dry periods. • Plantation protected from grazing/cutting. • No avoidable damage to existing vegetation. • Improved vegetation cover and soil/slope stability maintained. • Monitoring and photographic records maintained.

Phase / Aspects	Implementation Plan			Monitoring Plan				Budget/ costs In PKR
	Environmental and Social Impacts	***Proposed Mitigation Measures***	***Responsibility***	***Monitoring Parameters***	***Frequency***	***Responsibility***	***Compliance Criteria***	
Post-Construction Phase								
Routine Bi-Annual Inspections	Undetected structural damage, erosion, sediment buildup affecting the performance of flood protection embankments and gabion bunds.	Conduct pre- and post-monsoon inspections; prepare repair plans	Irrigation Department KP	Condition of embankments, gabion bunds, slopes, drainage channels, and sediment accumulation.	Bi-annual (Apr-May, Oct-Nov)	Irrigation Department KP, WWF-Pakistan	No defects unaddressed beyond 30 days	Included in annual O&M budgets
Flood Protection Embankment Maintenance	Slope instability, erosion, settlement, localized erosion/ undercutting.	Repair eroded or settled sections, maintain drainage paths, restore vegetation on disturbed slopes, and repair stone pitching or slope protection works where required.	Irrigation Department KP, CBO	Structural stability, evidence of erosion or settlement.	Continuous; reviewed bi-annually	Irrigation Department KP and WWF-Pakistan	No cracks, seepage, or settlement; ≥70% vegetation cover at all three sites	
Gabion Bund Maintenance	Reduced flow regulation, localized erosion/ undercutting, structural damage to gabion baskets, displacement of stones, or excessive sediment accumulation.	Inspect gabion bunds regularly, repair damaged wire mesh, replace displaced stones where necessary, remove debris obstructing flow, and remove excessive sediment only where it affects hydraulic performance. Maintain spill kits: Refueling shall not be done withing immediately adjacent to seasonal drainage channels, watercourses, or flood conveyance areas. Spill response shall be implemented in	Irrigation Department KP, CBO	Structural integrity of gabion bunds, sediment accumulation, evidence of erosion/ undercutting or displacement.	Bi-annual	Irrigation Department KP and WWF-Pakistan	All five gabion bunds remain structurally stable and fully functional.	

		accordance with the Spill Prevention and Waste Management procedures contained in the Waste Management Plan (Annex 2).					
Community-Based Monitoring	Delayed reporting of maintenance needs, damage, or safety concerns affecting the long-term sustainability of the structures.	Engage Community-Based Organizations (CBOs) and local community representatives to report structural damage, erosion, drainage obstruction, and community safety concerns through the established reporting and Grievance Redress Mechanism (GRM).	CBO / Local Community	Number of issues reported/ resolved; maintenance response time.	Continuous	Irrigation Department KP and WWF-Pakistan	Timely reporting and resolution of maintenance and safety issues

Phase / Aspects	**Implementation Plan**			**Monitoring Plan**			**Budget/ costs In PKR**
	Environmental and Social Impacts	***Proposed Mitigation Measures***	***Responsibility***	***Monitoring Parameters***	***Frequency***	***Responsibility***	***Compliance Criteria***
Overall O&M Performance Monitoring	Decline in system performance, ecological imbalance	Annual review of O&M implementation and adaptive management	WWF-Pakistan, Irrigation Department	All key indicators (Structure, sediment)	Annual	Irrigation Department KP and WWF-Pakistan	All indicators meet defined targets

SECTION 6: STAKEHOLDER CONSULTATION AND ENGAGEMENT

Stakeholder engagement is a cornerstone of this activity, ensuring community ownership and mitigating social and environmental risks.

Stakeholders Identified:

- **Primary:** Residents of Abdul Khel, Shah Hassan Khel, Katta Khel, Wanda Shahbazi, Paniala and Wanda Lohani villages (6100 households), including landowners, farmers, livestock keepers, local laborers, and community members residing within the project influence area.

- **Secondary:** Community elders, Jirga members, Community-Based Organizations (CBOs), women representatives, and vulnerable households.

- **Institutional**: Provincial Irrigation Department (KP), District/Tehsil Administration of D.I Khan, and Local CSOs.

Consultation Process:

Stakeholder consultations were conducted during the **Environmental and Social Safeguards (ESS) screening, feasibility assessment, site identification, engineering surveys, and preparation of the detailed project designs** for the proposed **three (3) flood protection embankments and five (5) gabion bunds**. Consultations involved beneficiary community members, tribal and community elders, local landowners, farmers, Community-Based Organizations (CBOs), and women community members during the ESS screening and consent processes where culturally appropriate. Relevant institutional stakeholders, including the **Provincial Irrigation Department, WWF-Pakistan/Recharge Pakistan SIU, and technical and design teams**, were also engaged during the assessment and design process.

The consultations focused on explaining the proposed interventions and their anticipated benefits and risks; confirming community support and acceptance; identifying potential environmental and social concerns; understanding existing land use, access, drainage, flood and erosion conditions; obtaining local knowledge relevant to site selection and intervention design; and discussing appropriate mitigation measures. Consultations further emphasized the importance of maintaining natural drainage pathways, minimizing construction-related disturbance, providing employment opportunities for local communities where feasible, and maintaining regular communication throughout implementation.

The consultation and consent processes also provided community members with opportunities to ask questions, provide feedback, and receive information on the **Project Grievance Redress Mechanism (GRM)**.

6.1 Ongoing Engagement:

Stakeholder engagement will continue throughout the project lifecycle in accordance with the Recharge Pakistan Stakeholder Engagement Framework and WWF Social and Environmental Safeguards Implementation Procedures (SIPP).

The ongoing engagement process will include:

- **Community Organization:** Regular meetings will be conducted with Community-Based Organizations (CBOs), community elders, and representatives before and during construction to communicate construction schedules, planned activities, and safety measures.

- **The Terms of Partnerships (ToPs):** for flood protection embankments with communities of Wanda Lohani are based on community consultations between Irrigation Department and targeted communities supported by WWF-SIU Team. Consultations for the said purpose will be documented and recorded as evidence base.

- **Informed Consent Process:** Undertaking a rigorous Informed Consent process with the CBO and community elders *(jirgah).* This will ensure that all activities, particularly those affecting local hiring, have broad community support and documented consent before implementation.

- **Employment and Community Benefits:** Where technically feasible, contractors will give preference to qualified local labour in accordance with transparent recruitment procedures. Communities will be kept informed regarding employment opportunities and construction schedules.

- **Construction Progress Meetings:** Periodic meetings will be held with community representatives to review construction progress, discuss any environmental or social issues arising during implementation, and agree upon corrective actions where necessary.

- **Project Completion and Handover:** Upon completion of construction, consultations will be conducted with the Provincial Irrigation Department, Community-Based Organizations, and local community representatives to facilitate the formal handover of completed structures and to clarify roles and responsibilities for routine operation and maintenance.

APPENDIX 1: Stakeholder Consultation Plan

I: Community consultation Reports/Stakeholders meetings:

Consultations for the **three (3) Flood Protection Embankments and five (5) Gabion Bunds** were conducted in a context-specific and inclusive manner, with the participation of both women and men where relevant. During the ESS screening stage, both male and female community members were consulted to ensure broad community input, and women's perspectives were specifically sought and documented. These consultations confirmed that women are generally not responsible for water collection, a role primarily undertaken by men and boys—an observation further validated during site visits. However, in subsequent consultations related to technical design and formal agreements, participation was largely limited to male community members. This approach was adopted due to a combination of factors, including local cultural norms, the established role of men in water resource management, and the technical nature of discussions, which required specific knowledge and familiarity. Additionally, formal decision-making and endorsement processes in the area are typically carried out through male tribal/community elders. Therefore, while efforts were made to include women's input at the screening and consent stages, their participation in certain consultations was limited to ensure alignment with local practices, relevance to roles and responsibilities, and the technical requirements of the intervention. The final designs have been disclosed to affected stakeholders as part of ESMP disclosure process. Additional consultations shall be undertaken to explain the purpose of the design modifications (if any), anticipated environmental and social impacts and proposed mitigation measures. Outcomes of these consultations shall be documented and considered during implementation.

Site/Village (Union Council)	District Date of Visit /FR	Team & Local Support	GPS Coordinates (Latitude, Longitude)	Total Attendees (Men/Women)	Primary Tribe/Sub-castes (Landowners)	Estimated Total Households (3km Radius)	Key Consultation Outcomes / FPIC Status
Paniala – Flood Protection Embankment near Police Station	DI Khan 29-04-2026	RP SIU DI Khan ESS/Social Team with local community representatives	N: 32,249679 E: 70,271526	6(6 Men, 0 Women)	Residents, landowners and community representatives of Paniala and surrounding beneficiary areas	≈ 3980 HHs	Consultation was conducted with male community members during ESS screening of the proposed flood protection embankment. The community expressed support for the proposed intervention and willingness to cooperate during implementation. Potential environmental and social risks, anticipated flood-protection benefits, mitigation measures and the Project GRM were discussed. Consent process was complied.

Wanda Lohani-Flood Protection Embankments (2 Nos)	DI Khan 29-04-2026	RP SIU DI Khan ESS/Social Team with local community representatives	N: 32.280638, E: 71.035790 N: 32.282661, E: 71.035461	12 (6 Men, 6 Women)	Residents, landowners and community representatives of Wanda Lohani and surrounding beneficiary areas	≈ 950 HHs	Consultation was conducted with male and female community members during ESS screening. The proposed flood protection works, expected protection of settlements, agricultural land and local assets, potential environmental and social risks, mitigation measures, community participation and the Project GRM were discussed. Consent process was complied.

Site/Village (Union Council)	District/FR	Date of Visit	Team & Local Support	GPS Coordinates (Latitude, Longitude)	Total Attendees (Men/Women)	Primary Tribe/Sub-castes (Landowners)	Estimated Total Households (3km Radius)	Key Consultation Outcomes / FPIC Status
Katta Khel-Gabion Bund	DI Khan	08-04-2026	RP SIU DI Khan ESS/Social Team with local community representatives	N: 32.372886 E: 71.056931	6 (6 Men, 0 Women)	Residents, landowners and community representatives of Katta Khel	≈ 1410 HHs	Consultation was conducted as part of the ESS screening process. Community members expressed support for the proposed gabion bund and willingness to cooperate with WWF-Pakistan and the Irrigation Department during implementation. Expected benefits relating to runoff regulation, erosion control and groundwater recharge, together with potential risks and mitigation measures, were discussed. Consent forms were filled for compliance.
Wanda Shahbazi – Gabion Bund	DI Khan	08-04-2026	RP SIU DI Khan ESS/Social Team with local community representatives	N: 32.348756, E: 71.001600	6 (6 Men, 0 Women)	Residents, landowners and community representatives of Wanda Shahbazi	≈ 2010 HHs	Consultation was conducted during ESS screening. The community expressed support for the proposed intervention and willingness to cooperate during implementation. The anticipated benefits of runoff regulation, erosion control, sediment management and groundwater recharge were discussed along with applicable environmental and social safeguards.

Shah Hassan Khel -1- Gabion Bund	DI Khan	01-04-2026	RP SIU DI Khan ESS/Social Team with local community representatives	N: 32.358000 E: 71.025000	6 (6 Men, 0 Women)	Residents, landowners and community representatives of Shah Hassan Khel	≈ 1010 HHs	Consultation confirmed community support for the proposed gabion bund and willingness to cooperate during implementation. Potential environmental and social risks, anticipated community benefits, mitigation measures and the Project GRM were discussed.
Abdul Khel- Gabion Bund	DI Khan	12-03-2026	RP SIU DI Khan ESS/Social Team with local community representatives	N:32.336025 E:70.975833	6 (6 Men, 0 Women)	Residents, landowners and community representatives of Abdul Khel	≈ 1980 HHs	Consultation confirmed community support for the proposed gabion bund and willingness to cooperate with WWF-Pakistan and the Irrigation Department. The anticipated benefits relating to flow regulation, erosion control and groundwater recharge, together with potential environmental and social risks and mitigation measures, were discussed.
Shah Hassan Khel-2- Gabion Bund	DI Khan	01-04-2026	RP SIU DI Khan ESS/Social Team with local community representatives	N: 32.365000 E: 71.043000	6 (6 Men, 0 Women)	Residents, landowners and community representatives of Shah Hassan Khel	≈ 1010 HHs	Consultation confirmed community support and willingness to cooperate during implementation. The intervention's anticipated community benefits, environmental and social risks, mitigation measures and grievance redress arrangements were discussed.

. Stakeholder consultations primarily helped confirm local concerns and implementation considerations, including continued community engagement, coordination with relevant government departments and local stakeholders, and appropriate measures to minimize construction-related disturbances like hiring of local labor to avoid and minimize the social conflict etc. These considerations have been reflected, where relevant, in the stakeholder engagement.

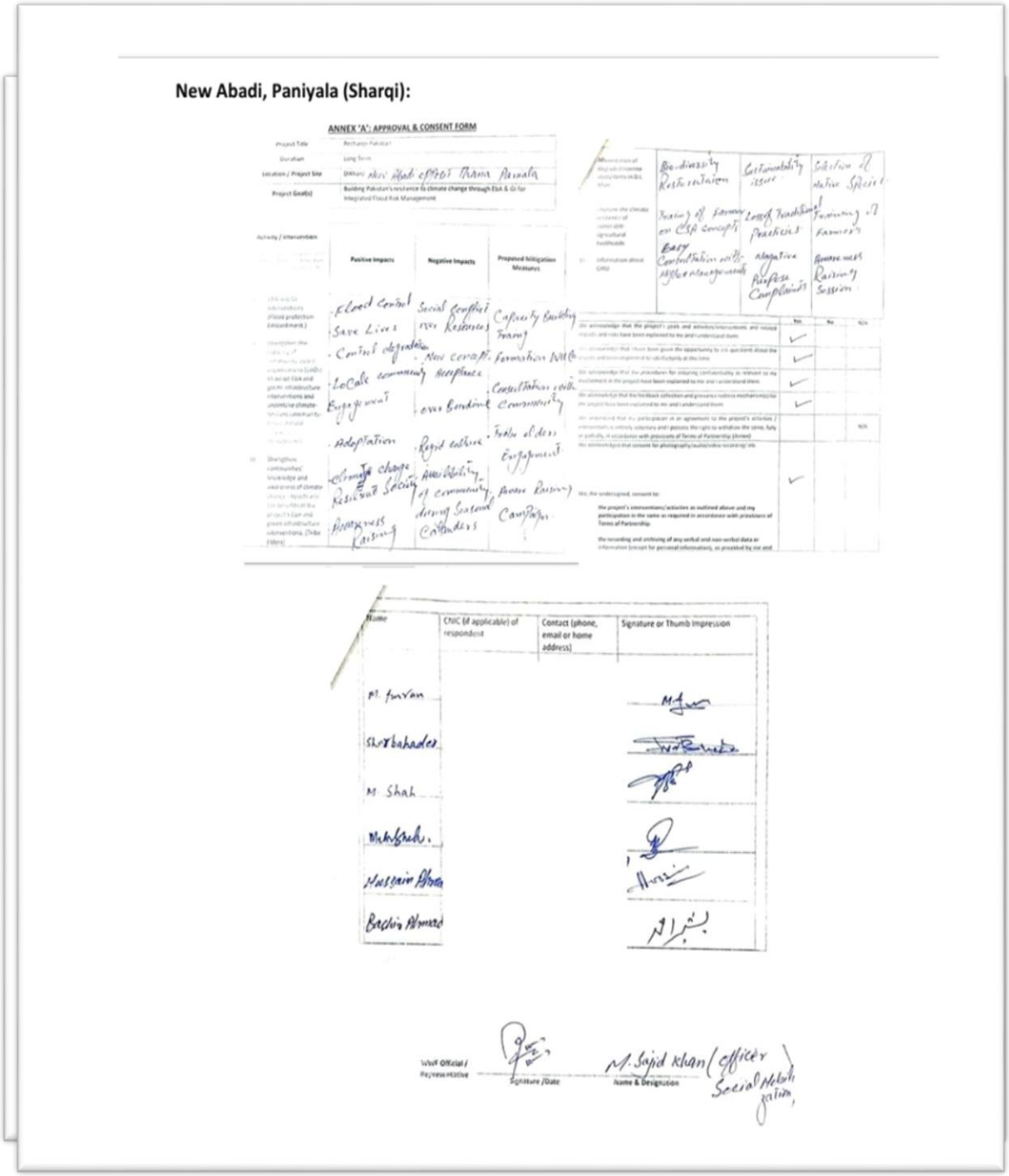
II: Community Consultation Plan

Table5: Security risk categories and key causes relevant to Activity 1.2.1 – Design and Implement Green Infrastructure Measures for Flood Risk Reduction, covering Sub-Activity 1.2.1.2 – Construction of 3 Flood Protection Embankments at Paniala and Wanda Lohani and Sub-Activity 1.2.1.4 – Construction of 5 Gabion Bunds.

COMMUNITY CONSULTATION-MANAGEMENT PLAN FOR THE FLOOD PROTECTION EMBANKMENTS AND GABION BUNDS (ACTIVITY 1.2.1 – DESIGN AND IMPLEMENT GREEN INFRASTRUCTURE MEASURES FOR FLOOD RISK REDUCTION, COVERING SUB-ACTIVITY 1.2.1.2 – CONSTRUCTION OF 3 FLOOD PROTECTION EMBANKMENTS AT PANIALA AND WANDA LOHANI AND SUB-ACTIVITY 1.2.1.4 – CONSTRUCTION OF 5 GABION , SUB ACTIVITIES 1.2.1.2 AND 1.2.1.4) IN YEAR 2026		
Step wise community Consultative	**Responsible Party**	**Planned Measures for Community consultative Process**
Consultation Meeting with Tribal/Community Elders and Community Representatives on the Approved Designs and Scope of Works	KP Irrigation Department, Design & Supervisory Consultants, NBS, ESS and Gender Teams of SIU DI Khan.	Consultations will be conducted with relevant tribal/community elders, CBO representatives, landowners, community representatives, where culturally appropriate, to explain the approved designs and scope of works for the three (3) flood protection embankments and five (5) gabion bunds. The consultation process with communities will be documented before the commencement of physical work at sites. October2026
Consultation on Construction Schedule, Site Access and Community Safety Arrangements	KP Irrigation Department; Contractor; DSC; SIU ESS and Community Mobilization Teams	Communities will be informed in advance about the construction schedule, work areas, movement of machinery and construction vehicles, temporary access restrictions, and applicable community health and safety measures. Attention will be given to maintaining safe access to settlements, agricultural land, grazing areas, and commonly used routes, where applicable. October-December 2026
Consultation Meeting with the Community Elders, CBO members, and Contractor of Construction work for Monitoring of Measures under Environmental and Social Management Plan and GRM	Social Mobilization, ESS, Gender and NBS Teams of SIU DI Khan	The community elders, CBO members and contractor of construction work will be consulted by the SIU DI Khan staff for and the compliance with the measures under ESMP will be monitored. During these meetings, the SIU team will monitor the ESMP indicators and in case of any non-compliance, the matter will be discussed and reported to the relevant forums for further course correction. The consultation meetings for any issue/ grievance of the community or contractor will be conducted and will be documented and reported to the relevant forums for further process of grievance redressal. October – December 2026
Consultation on Completion, Handover and Operation & Maintenance Arrangements	KP Irrigation Department, Design & Supervisory Consultants, NBS, ESS and Gender Teams of SIU DI Khan.	Upon completion of construction, consultations will be conducted to communicate the completion and handover arrangements and clarify responsibilities for routine observation, community-based monitoring, reporting of structural damage, erosion/undercutting, sediment or debris accumulation, and other maintenance concerns. Relevant provisions of the Operation and Maintenance Plan will be explained to the participating communities and CBOs. October-December 2026

III. Consent Forms

Flood Protection Embankments:



New Abadi, Paniyala (Sharqi):

ANNEX 'A': APPROVAL & CONSENT FORM

Project Title	Rechargi Pakistan
Duration	Long Term
Location / Project Site	Dikhani New Abadi effect Thana Paniala
Project Goal(s)	Building Pakistan's resilience to climate change through EbA & GI for Integrated Flood Risk Management

Activity / Intervention	Positive Impacts	Negative Impacts	Proposed Mitigation Measures
	Flood Control Save Lives Control degradation LoCale community Engagement Adoptation Climate change Resilient Society Awareness Raising	Social conflict over Resources New concept Acceptance over Burdens Rigid culture Availability of community during Seasonal Calenders	Capacity Building Training Formation WUCs Consultation with Community Tribe elders Engagement Aware Raising Campaign

	Bio-diversity Restoration	Sustainability issue	Selection of native Species
	Training of Farmer on CSA concepts	Loss of Traditional Practices	Training of Farmers
	Easy Consultation with Higher Management	Negative Purpose Complaints	Awareness Raising Session

	Yes	No	N/A
	✓		
	✓		
	✓		
	✓		
			N/A
	✓		

Name	CNIC (if applicable) of respondent	Contact (phone, email or home address)	Signature or Thumb Impression
M. Imran			
Sharbahader			
M. Shah			
Mahshah.			
Mussain Ahmed			
Bashir Ahmad			

WWF Official / Representative — Signature /Date — M. Sajid Khan (Officer Social Mobilization) — Name & Designation

Village Wanda Lohani: M

ANNEX 'A': APPROVAL & CONSENT FORM

Project Title	Recharge Pakistan
Duration	Long Term
Location / Project Site	DIKhan/ Kutti Khel (Wanda Lohani)
Project Goal(s)	Building Pakistan's resilience to climate change through EbA & GI for Integrated Flood Risk Management

Activity / Intervention	Positive Impacts	Negative Impacts	Proposed Mitigation Measures
I. EBA and GI Interventions (Flood protection Embankment.)	- Flood control - Save lives.	- Social Conflict - Conflicts over	- Construction Flood Protection through Consultations
II. Strengthen the capacity of community-based organisations (CBOs) to adopt EbA and green infrastructure interventions and undertake climate-resilient community-based natural resource management.	- Control degradation - Save infrastructure - Local community Engagement. - Adoptation and Build Climate Change Resilience Society.	- Resources and Land Rights - Rigid culture - Availibility of Community during seasonal Changers. - Women involvements	- with Community - WUCs Formation - Formation of VO/WO - Awareness Raising Campaign - Tribal Elders involvement - Regular Consultation
III. Strengthen communities' knowledge and awareness of climate change impacts and the benefits of the project's EbA and green infrastructure interventions. (Tribe Elders)			
Afforestation of degraded riverine ecosystems in D.I. Khan.	Bio-diversity Restoration.	Sustainability issues.	Selection of Native Species
V. Improve the climate resilience of vulnerable agricultural livelihoods.	increase in Livelihood opportunities.	Market and Supply Chain Challanges.	Training for Farmers.
VI. Information about GRM	capacity Building of Farmers.	- Negative Complaints	- involvements of Locale Community in Livelihood Activities. - Sessions on GRM.

	Yes	No	N/A
We acknowledge that the project's goals and activities/interventions and related impacts and risks have been explained to me and I understand them.	✓		
We acknowledge that I have been given the opportunity to ask questions about the project and been responded to satisfactorily at this time.	✓		
We acknowledge that the procedures for ensuring confidentiality as relevant to my involvement in the project have been explained to me and I understand them.	✓		
We acknowledge that the feedback collection and grievance redress mechanism(s) for the project have been explained to me and I understand them.	✓		
We understand that my participation in or agreement to the project's activities / interventions is entirely voluntary and I possess the right to withdraw the same, fully or partially, in accordance with provisions of Terms of Partnership (Terms).			N/A
We acknowledged that consent for photography/audio/video recording/ etc.	✓		

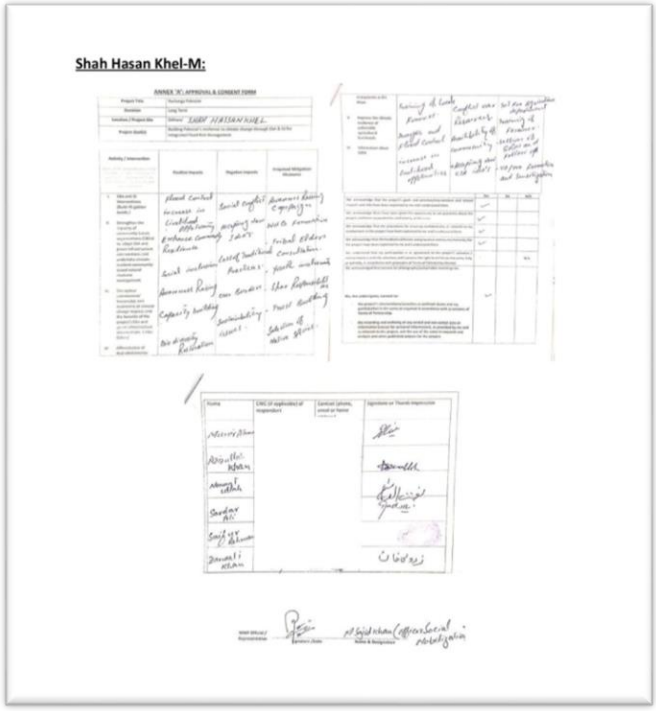
We, the undersigned, consent to:

- the project's interventions/activities as outlined above and my participation in the same as required in accordance with provisions of Terms of Partnership.
- the recording and archiving of any verbal and non-verbal data or information (except for personal information), as provided by me and

Name	CNIC (if applicable) of respondent	Contact (phone, email or home address)	Signature or Thumb Impression
نجیب اللہ			نجیب اللہ
محمد شاہجہان			شاہجہان
فیروز خان			[signature]
عبداللہ خان			[signature]
ہدایت اللہ			ہدایت اللہ
شوکت اللہ			[signature]

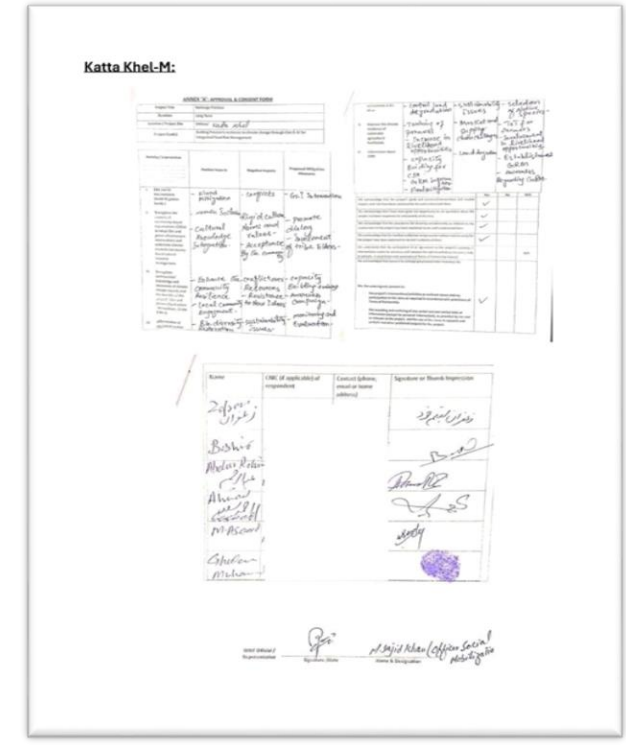
WWF Official / Representative — Signature /Date — M. Sajid Khan (Officer Social Mobilizations) Name & Designation

Gabion Bunds:



Shah Hasan Khel-M:

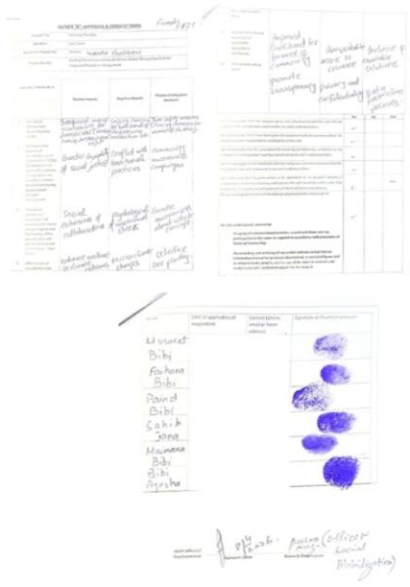
ANNEX 'A': APPROVAL & CONSENT FORM



Katta Khel-M:

ANNEX 'A': APPROVAL & CONSENT FORM

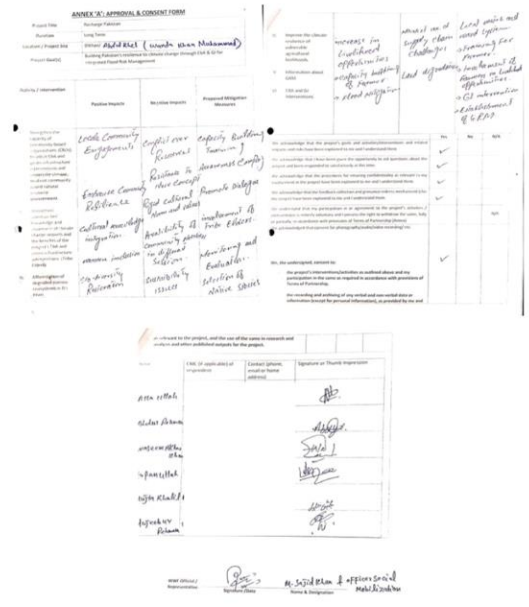
Wanda Shahbazi-F:



Katta Khel-F:



Abdul Khel-M:



ANNEX 'A': APPROVAL & CONSENT FORM

Project Title: Recharge Pakistan
Duration: Long Term
Location / Project Site: District Abdul Khel (wanda Khan Mohammad)
Project Name(s): Building Pakistan's resilience to climate change through Ecosystem based Integrated Flood Risk Management

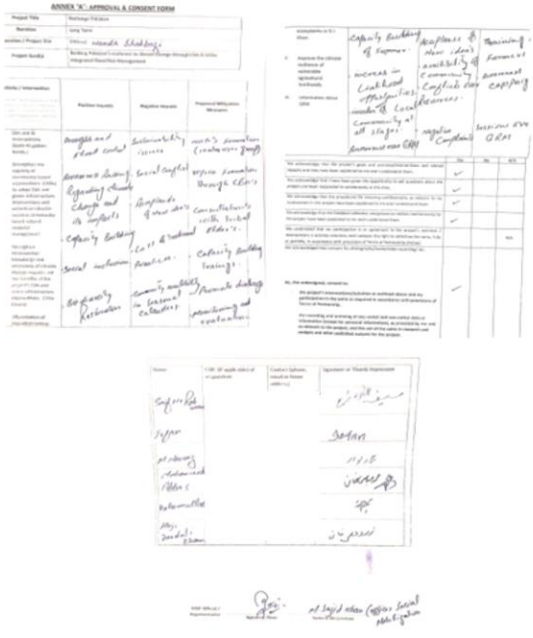
Activity / Intervention	Positive Impacts	Negative Impacts	Proposed Mitigation Measures
Strengthening the capacity of community based organizations (CBOs) and government line departments and communities to plan, implement, monitor, evaluate and sustain community and natural resource governance.	Locals Community Engagements	Conflict over Resources	Capacity Building Trainings
	Enhance Community Resilience	Resistance to new concept	Awareness Campaigns
	Cultural knowledge integration	Rigid cultural norms and values	Promote dialogue
	resource limitation	Availability of Community people in different Seasons	Involvement of Line Officers.
	Co-diversity Restoration	Connectivity issues	Monitoring and Evaluation. Selection of Native species

	Yes	No	N/A
We acknowledge that the project's goals and activities/interventions and related impacts and risks have been explained to me and I understand them.	✓		
We acknowledge that I have been given the opportunity to ask questions about the project and been responded to satisfactorily in the same.	✓		
We acknowledge that the procedures for ensuring confidentiality as relevant to my involvement in the project have been explained to me and I understand them.	✓		
We acknowledge that the feedback collected and grievances redress mechanism in the project have been explained to me and I understand them.	✓		
We understand that my participation in or agreement to the project's activities / interventions is entirely voluntary and I possess the right to withdraw the same, fully or partially, in accordance with provisions of Terms of Partnership (ToPs). I acknowledge that consent for photography/video/video recording etc.			N/A
We, the undersigned, consent to: the project's interventions/activities as outlined above and my participation in the same as required in accordance with provisions of Terms of Partnership. the recording and archiving of any verbal and non-verbal data or information (except for personal information), as provided by me and relevant to the project, and the use of the same in research and analysis and other published outputs for the project.	✓		

Name	CNIC (if applicable) of respondent	Contact (phone, email or home address)	Signature or Thumb Impression
Abdul Khel			
Abdul Rehman			
Waseem Akhtar			
Sufyan Ullah			
Sajid Khalil			
Inayatullah			

www Official / Representative — Signature/Date — M. Sajid Khan & officers Social Mobilizers — Name & Designation

Wanda Shahbazi-M:



ANNEX 'A': APPROVAL & CONSENT FORM

Project Title: Recharge Pakistan
Duration: Long Term
Location / Project Site: District wanda Khakhazi
Project Name(s): Building Pakistan's resilience to climate change through Ecosystem based Integrated Flood Risk Management

Activity / Intervention	Positive Impacts	Negative Impacts	Proposed Mitigation Measures
Strengthening the capacity of community based organizations (CBOs) to collect fish and gender related matters, Watershed Plans and Community Resource Management Plans (CRMPs) and sustainable natural resource management	Strengthen and Build Confidence	Sustainability issues	Locals formation (community group)
	Awareness Building Regarding Climate Change and its impacts	Social Conflict	Inform formation through CBOs
	Capacity Building	Acceptance of new ideas	Consultations with Local Elders.
	Social mechanism	Lack of traditional practices.	Capacity Building Trainings
	Co-diversity Restoration	Community mobilization in farmers Collectives	Promote dialogue
			monitoring and evaluation

	Yes	No	N/A
We acknowledge that the project's goals and activities/interventions and related impacts and risks have been explained to me and I understand them.	✓		
We acknowledge that I have been given the opportunity to ask questions about the project and been responded to satisfactorily in the same.	✓		
We acknowledge that the procedures for ensuring confidentiality as relevant to my involvement in the project have been explained to me and I understand them.	✓		
We acknowledge that the feedback collected, complaints or redress mechanism by the project have been explained to me and I understand them.	✓		
We understand that my participation in or agreement to the project's activities / interventions is entirely voluntary and I possess the right to withdraw the same, fully or partially, in accordance with provisions of Terms of Partnership (ToPs). We acknowledge that consent for photography/video/video recording etc.			N/A
We, the undersigned, consent to: the project's interventions/activities as outlined above and my participation in the same as required in accordance with provisions of Terms of Partnership. the recording and archiving of any verbal and non-verbal data or information (except for personal information), as provided by me and relevant to the project, and the use of the same in research and analysis and other published outputs for the project.	✓		

Name	CNIC (if applicable) of respondent	Contact (phone, email or home address)	Signature or Thumb Impression
Sufyan Ullah			
Sufyan			
Mr. Waseem Akhtar			
Rehmatullah			
Miss Sanabil Rehman			

www Official / Representative — Signature/Date — M. Sajid Khan Officers Social Mobilizers — Name & Designation

Shah Hasan Khel-F:

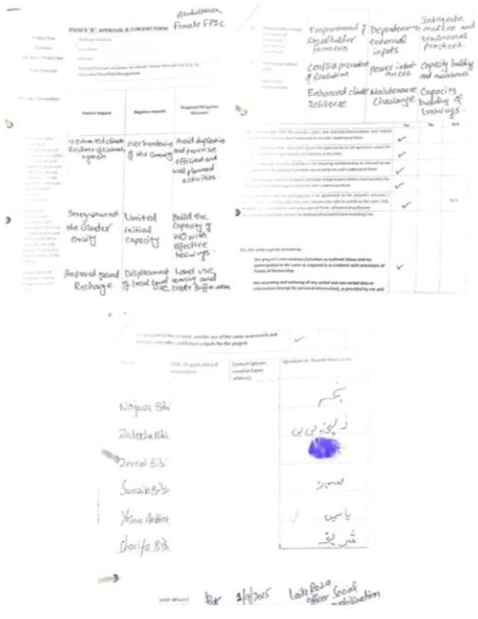








Abdul Khel-F:



SECTION 7: ESMP IMPLEMENTATION MECHANISM, MONITORING PLAN & REPORTING

ESMP Implementation Mechanism:

Provincial Irrigation Department (through the hired Contractor): Responsible for orientation on approved and disclosed ESMP before commencement of intervention for all the relevant stakeholders immediately after completion of disclosure period. They are also responsible for day-to-day implementation of ESMP covering all design, construction and implementation phase mitigation measures and documentation as stipulated in their contract. (As recorded in Section 5)

The SIU-RP ESS/M&E Officer (As recorded in Section 5) will conduct monitoring in accordance with the frequency set in the ESMP, verify contractor compliance, and report to the ESS Manager. Community Mobilization Officers will be responsible for stakeholder engagement, community consultations (local elders, CBOs), dissemination of information on the Project Grievance Redress Mechanism (GRM). (Annex: stakeholder engagement plan and GRM)

WWF-Pakistan PMU: Holds overall responsibility for oversight of ESMP compliance. The ESS Manager, based at the PMU, will provide safeguards oversight, review monitoring and compliance reports and ensure appropriate follow-up on identified non-compliances and corrective actions. ESMP Monitoring Plan:

Monitoring will be conducted to verify compliance with the ESMP and assess the effectiveness of the prescribed mitigation measures. The specific monitoring parameters, frequencies, responsibilities, and compliance criteria are detailed in the **ESMP Matrix provided in Section 5** and Security-related monitoring shall also consider compliance with the WWF Pakistan Security Plan (Appendix 2)

ESMP Reporting:

The contractor will submit Biweekly/fortnightly progress reports to the Irrigation Department and the SIU, including a section on ESMP compliance as per the monitoring checklist frequency (Section 5).

The SIU ESS/M&E Officer will submit monthly monitoring reports to the PMU ESS Manager.

The ESS Manager will consolidate these reports and include a summary of safeguards performance in the project's six-monthly Mid-year Technical Review and the Annual Performance Report submitted to the WWF US AE.

Environmental incidents, accidents, significant community complaints, and near-miss events shall be reported immediately in accordance with the Safeguard Incident Reporting Procedure, and appropriate corrective actions shall be implemented and documented.

The contractor and SIU will submit reports according to the frequency recorded in Section 5 of ESMP and Monitoring Checklist of M&E to PMU.

SECTION 8: SECURITY MANAGEMENT PLAN

Security Context

The security situation in District Dera Ismail Khan remains volatile due to an increase in terrorist incidents and intelligence-based operations (IBOs), particularly affecting surrounding districts such as Tank and South Waziristan. Law Enforcement Agencies (LEAs) are frequently targeted; however, 3 Flood Embankment Sites and 5 Gabion Bund Sites remain accessible and operationally safe. Given the dynamic nature of the security environment, a precautionary and adaptive security approach is required throughout implementation.

8.1 Purpose, Objectives, and Expected Outcomes

Purpose

This Security Management Plan provides a framework to ensure the safety and security of all project personnel (WWF staff, KP Irrigation Department staff, contractors, and local labor) and project assets during the flood protection embankments and gabion bunds constructions. The plan addresses security, social, and operational risks associated with excavation, construction, and embankment enhancement activities in Abdul Khel, Shah Hassan Khel, Katta Khel, Wanda Shahbazi, Paniala and Wanda Lohani.

Objectives

- To identify and mitigate security risks linked to field operations in a fragile security context.
- To integrate community consensus mechanisms (Jirgah) to prevent social and tribal conflict.
- To define incident response, suspension, and evacuation procedures in line with the WWF-Pakistan Security Plan and ESMF Security Protocol.

Expected Outcomes

- Zero harm to project staff and communities.
- Uninterrupted and safe implementation of flood protection embankments and gabion bunds construction works.

Sustained community trust, neutrality, and avoidance of conflict related to water access, labor hiring, or security dynamics.

8.2 Risk Analysis and Causes of Security Disturbance

Risk Category	Key Causes Relevant to Activity 1.2.1 – Design and Implement Green Infrastructure Measures for Flood Risk Reduction, covering Sub-Activity 1.2.1.2 – Construction of 3 Flood Protection Embankments at Paniala and Wanda Lohani and Sub-Activity 1.2.1.4 – Construction of 5 Gabion
External Security & Conflict	Persistent threat from militant groups in the DI Khan region; increased police and military presence; potential movement restrictions during IBOs.
Internal Social Conflict	Potential for community grievances arising from temporary disruption of access to agricultural land, grazing areas, and local pathways during construction, as well as perceived inequity in local employment opportunities and distribution of project benefits.
Operational & Environmental Safety	Construction hazards during excavation and embankment works, exposure to waterborne diseases (diarrhea, malaria); presence of snakes and scorpions.

Criminal Activity	Low-level risk of theft or intimidation due to weak state presence in peripheral areas.

8.3 Security Management Procedures and Protocols

This ESMP fully complies with the Recharge Pakistan ESMF Security Protocol and the WWF-Pakistan Security Management Plan. All project activities, including the construction of three flood protection embankments and five gabion bunds across the Paniala/Wanda Lohani and Abdul Khel Cluster sites, will be implemented in accordance with the approved security Standard Operating Procedures (SOPs).

Key Security Measures

- Pre-approved, daylight-only travel using GPS-tracked vehicles.
- Exclusive hiring of local labor to reduce social tension and security exposure.
- Continuous engagement with community elders (Jirgah/informed consent) to ensure acceptance, especially regarding temporary restrictions on project sites access.
- Immediate suspension of activities and evacuation if security threats or official advisories are issued.
- Environmental health and safety risks are addressed through mandatory PPE use, first- aid availability, and coordination with the Forest Department and Rescue 1122.

Operational Security Protocols

Travel and Field Protocols

- All site visits require prior approval from the Site Manager and Manager Admin & Security.
- Field movement restricted to daylight hours only.
- Vehicles must have functional GPS tracking; staff must carry official mobile phones.

Coordination with Rescue 1122 (DI Khan) always maintained.

Community & Conflict Risk Mitigation

- Informed consent and Jirgah consultations mandatory before and during construction to manage risks related to restricted water access.
- Temporary alternative water access measures communicated clearly to the community.
- Immediate work stoppage and evacuation if the area is deemed unstable by security authorities.

Environmental Health & Safety

- Mandatory PPE for all workers due to excavation hazards and poisonous wildlife.
- Disease prevention measures for waterborne illnesses.

8.3.2 Institutional Roles and Responsibilities

Role	Responsibility
Senior Manager, Admin & Security (PMU)	Overall security oversight; coordination with LEAs and district administration.
Site Manager	Daily liaison with LEAs; dissemination of security alerts; escort coordination if required.
Site Manager / ESS & M&E Officer	Ensure compliance with security protocols; lead community engagement.
KP Irrigation Department (Local Staff)	Day-to-day field implementation; immediate reporting of security concerns.
All Project Staff	Compliance with no-night-travel rule, GPS use, and communication protocols.

Incident Reporting

All incidents must be recorded using the Incident Report Form and submitted to the Senior Manager Admin & Security (PMU) within 24 hours. High-risk incidents must be reported immediately via phone or walkie-talkie.

Contact	Role
PMU Security Focal Point	Senior Manager, Admin & Security
Local Law Enforcement	Regional Police Office, D.I. Khan
Emergency Services	Rescue 1122 / Police
Manager SIU-RP	Recharge Pakistan

APPENDIX 02: Emergency Preparedness and Response Plan (EPRP)

Since the **Security Management Plan already covers security risks, protocols, incident reporting, institutional responsibilities, emergency contacts, travel restrictions, evacuation procedures, and security-related emergencies**, the Emergency Preparedness and Response Plan should focus only on **occupational health, safety, environmental, and construction-related emergencies**, while making a reference to the Security Management Plan for security incidents.

Purpose

The Emergency Preparedness and Response Plan (EPRP) aims to protect workers, communities, and the environment during the construction of 3 Flood Protection Embankments and 5 Gabion Bands. The plan aims to minimize injuries, environmental damage, and operational disruptions through effective preparedness, response, reporting, and corrective actions.

Potential Emergency Situations

The following emergency situations may arise during project implementation:

- Worker injury or medical emergency.
- Fire incidents involving equipment, fuel, or temporary facilities.
- Vehicle accidents during transportation of personnel, materials, or equipment.
- Excavation or embankment collapse during earthworks.
- Wildlife encounters, including snake bites and scorpion stings.
- Fuel, oil, or lubricant spills causing environmental contamination.
- Extreme weather conditions, including heavy rainfall, heat stress, lightning, and strong winds.
- Flooding or flash floods affecting ongoing works.

Emergency Preparedness Measures

The Contractor shall:

- Establish emergency assembly points and evacuation routes.
- Maintain updated emergency contact information and first-aid facilities at the worksite
- Ensure all workers know about the emergency preparedness plan before mobilization.

Emergency Response Procedures

In the event of an emergency:

1. Notify the Site Supervisor and inform at emergency contact numbers.
2. Provide first aid and transportation where safe and appropriate.
3. Evacuate personnel to the designated assembly point if required.
4. Control and contain any fuel or oil spills to prevent environmental contamination, where it is safe to do so
5. Record and report the incident in accordance with project reporting procedures.

Note: Security-related incidents, threats, or evacuation requirements shall be managed in accordance with the Security Management Plan and WWF-Pakistan Security Procedures.

Emergency Equipment

The following equipment shall be available throughout the construction period:

- First-aid kits.
- Fire extinguishers.
- Communication devices.
- Personal Protective Equipment (PPE).
- Emergency contact lists.

Incident Reporting

- All emergencies, injuries, spills, and accidents shall be reported immediately to the Design & Supervision Consultant (CSC),Irrigation department, SIU and PMU.
- Incident reports shall be prepared within 24 hours of occurrence.
- Investigations shall identify root causes and required corrective actions.
- Serious incidents shall be reported and managed in accordance with Recharge Pakistan and GCF incident reporting requirements.

Monitoring Requirements

Indicator	Frequency	Responsible
Incident review	Monthly	Consulting firm / SIU
Corrective action implementation	As Required	Contractor / SIU

This streamlined EPRP avoids duplication with the Security Management Plan while ensuring adequate preparedness and response for occupational, environmental, and construction-related emergencies.

SECTION 9: GRIEVANCE REDRESS MECHANISM (GRM)

The project's currently existing Grievance Redress Mechanism (GRM) will be operational for the duration of the activity to ensure that any concerns from the community or workers are addressed promptly and transparently. In order to socialize with all stakeholders on RP GRM, the SIU ESS team, staff of irrigation department & staff of design consulting firms were provided initial ESMP compliance training and the same will be delivered to Water User Groups once formally organized in the intervention area.

Grievances can be raised verbally through CBOs, Water User Groups, SIU staff, or designated irrigation Department focal persons. Complaints may be communicated through one-to-one meetings, telephone calls, or voice notes submitted via the project's designated GRM phone or WhatsApp channels. All grievances will be screened using an eligibility checklist under the GRM to verify their validity and determine their nature. Grievances from workers and communities are classified according to their nature and addressed through distinct procedures tailored under GRM. Sensitive grievances, including those related to Sexual Exploitation, Abuse, and Harassment (SEAH), are handled through confidential, survivor- centered processes in accordance with the ESMF, with strict safeguards for privacy and referral to appropriate support services. Moreover, concerning Sexual exploitation, Abuse, and Harassment (SEAH), the WWF gender team based at the site implementation office will conduct dedicated awareness sessions for women in the project communities wherever security situation will allow.

9.1 Accessing the GRM:

Grievances can be submitted through 4 level GRM channels, which will be communicated to the community via posters in local languages and awareness sessions.
Channels include:

RP:

- Hotline & WhatsApp: 0300-5572564
- Email: grm@wwf.org.pk
- Complaint boxes at PMU and project site offices
- Written complaints submitted to project site offices
- Through relevant government departments
- Through verbal complaints made to project staff members.

WWF-Pakistan

- Website (Whistleblowing): https://www.wwfpak.org/contact_us/
- Call or WhatsApp: +92 300-0993725
- Email: complaints@wwf.org.pk
- Address: WWF-Pakistan, Ferozepur Road, Lahore-54600

WWF International

- Whistleblowing platform: wwfinternational.ethicspoint.com

WWF-US

- Email: SafeguardComplaint@wwfus.org
- Mail: Project Complaints Officer, World Wildlife Fund, 1250 24th Street NW, Washington, DC 20037

Green Climate Fund (GCF)

- Independent Redress Mechanism (IRM): https://irm.greenclimate.fund/

9.2 Grievance Redress Process:

Full details of the Project's GRM is outlined in the Project GRM Plan. Below is the high-level overview.

- **Receipt and Logging:** All complaints, regardless of the channel, are logged in a central database by the PMU Complaints Coordinator. Complaints related to Recharge Pakistan project interventions received by Irrigation Department will be duly received and logged on Department's GRM and intimated to GRM-RP.
- **Acknowledgement:** The complainant receives an acknowledgement within 48 hours.
- **Eligibility Screening:** The complaint is screened against the project's safeguard standards to determine its validity and severity.
- **Investigation:** For valid complaints, an Inquiry Team (comprising staff from M&E, Audit, and Safeguards) is formed to investigate. The team generates a confidential report within ten working days.
- **Resolution and Response:** Based on the findings, the PMU determines the resolution. The complainant is informed of the outcome, and the case is formally closed within a target of twenty working days from receipt.
- **Appeal:** Complainants who are not satisfied have the right to appeal to higher levels, including the WWF US Project Complaints Officer or the GCF's Independent Redress Mechanism.

ANNEX 1- Workers' Occupational Health & Safety (OHS) Management Plan

Purpose

This Plan establishes the occupational health and safety requirements for all personnel engaged in 3 Flood Protection Embankments and 5 Gabion Bunds construction works. It aims to prevent injuries, occupational illnesses and fatalities through systematic planning, implementation, monitoring and continual improvement.

Scope

Applies to WWF-Pakistan, PMU, Irrigation Department, Design & Supervision Consultant, Contractor, subcontractors and visitors during mobilization, construction, restoration and demobilization.

Applicable Standards

Recharge Pakistan ESMF; IFC Performance Standard 2; World Bank Group General EHS Guidelines; Pakistan Labour and Occupational Safety legislation; project ESMP.

Roles and Responsibilities

PMU oversees compliance; the Design & Supervision Consultant verifies implementation; the Contractor prepares task-specific method statements, conducts inductions, provides PPE and maintains records; all workers follow safety rules and immediately report unsafe conditions.

Personal Protective Equipment

Mandatory PPE includes safety helmets, high-visibility vests, safety boots, gloves and eye protection. Task-specific PPE such as hearing protection, respirators and fall protection shall be provided where required.

Emergency Preparedness

Emergency contacts shall be displayed on site. First aid kits,

Monitoring and Reporting

Daily site inspections, weekly safety inspections and monthly OHS performance reports shall be maintained. All incidents, near misses and unsafe conditions shall be recorded and investigated.

Sr.	Description	Unit	Quantity
1	Dust Masks 20 Nos.	Dust Marks	200
2	Hand-held air quality monitor	Handheld Air Quality monitor	2
3	Rubber Gloves 60 pairs	Rubber Gloves	60
4	Hand sanitizers 250 ml 40 Nos	Hand Sanitizer 250 ml	40
5	Hard hats 40 Nos	Hard Hats	40
6	Safety boots 40 pairs	Safety boots	40
7	Plastic small size office waste bins: 16 No	Plastic small office waste bins	16
8	Plastic 120 Ltr waste bins with wheels: 2 Nos per site	Plastic 120 Ltr waste bins with wheels:	16
9	Container boxes for e-waste: 1 No per site.	Container boxes for e-waste:	8
10	Spill response Kits	Nos	8

11	Fire extinguishers	Nos	16
12	First Aid Kits	Nos	8
13	Warning Sign Boards	Nos	16
14	Reflective Traffic Cones	Nos	40
15	Ear plugs/ Ear Muffs	Pairs	30
16	Safety Goggles	Nos	30
17	High visibility safety Vests	Nos	40

Note: The quantities provided above represent the minimum PPE and safety equipment requirements. The Contractor shall ensure that adequate PPE, emergency response equipment, and safety devices are always available at all construction sites based on the actual workforce, construction activities, and applicable occupational health and safety requirements.

ANNEX 2-WASTE MANAGEMENT PLAN FOR FLOOD PROTECTION EMBANKMENTS AND GABION BUNDS

1. Types of Waste Anticipated

A. Excavation and Construction Waste

- **Excavated soil/spoil:** Generated from foundation excavation, earthworks, and embankment/gabion construction. Suitable material will be assessed for reuse in embankment construction, backfilling, grading, or restoration; surplus/unsuitable material will be transported to a pre-approved disposal site (see Disposal Site Register, Section 2).
- **Stones and debris:** Surplus stones and rock fragments will be segregated for reuse (e.g., mulching) where feasible, or disposed of at the approved site.
- **Damaged construction materials:** Damaged gabion wire mesh, wire cuttings, broken concrete, surplus aggregate, and packaging will be collected and disposed of at the designated site.

B. Workers' Camp Waste:

Food scraps, plastic bottles, and packaging from worker activity will be segregated into biodegradable/non-biodegradable streams and collected routinely for sanitary disposal.

C. Hazardous Waste:

Used oil, lubricants, fuel spills, filters, oily rags, and contaminated absorbents/soil, generated from equipment operation and maintenance, will be segregated, stored in labeled leak-proof containers, and transferred only to licensed hazardous waste handlers/facilities.

2. Disposal Site Register

Disposal locations shall be confirmed prior to construction by the Contractor in coordination with PES (DSC), the SIU ESS Team, and the Irrigation Department. Sites shall avoid drainage channels, water bodies, agricultural/fertile land, residential areas, and other sensitive receptors, and shall use only Irrigation Department-verified Keyhole Markup Language Zipped KMZ coordinates.

Intervention	Disposal Site Coordinates	Approx. Distance	Land/Approval Status
FPE – Wanda Lohani Site 1	32.284643, 71.029048	~0.78 km	Land consent to be confirmed and retained before use
FPE – Wanda Lohani Site 2	32.284643, 71.029048	~0.63 km	Land consent to be confirmed and retained before use
FPE – Paniala / Opp. Police Station	32.246269, 70.869195	~0.44 km	Land consent to be confirmed and retained before use
Gabion – Abdul Khel	32.332158, 70.976280	~0.48 km	Land consent to be confirmed and retained before use
Gabion – Katta Khel	32.369692, 71.056704	~0.36 km	Land consent to be confirmed and retained before use
Gabion – Shah Hasan Khel Site 1	32.354654, 71.025863	~0.38 km	Land consent to be confirmed and retained before use
Gabion – Shah Hasan Khel Site 2	32.359282, 71.045822	~0.69 km	Land consent to be confirmed and retained before use
Gabion – Shahbazi	32.347323, 70.999695	~0.24 km	Land consent to be confirmed and retained before use

Where a disposal site is on land belonging to a local authority, community, or private landowner, written authorization/consent shall be obtained and retained in the Contractor's environmental records. No waste shall be deposited at an unauthorized location. Spoil at approved sites shall be compacted, stabilized, and covered with topsoil/vegetation to control erosion and dust.

3. Waste Management Measures

A. Excavated Material and Spoil Management

- Suitable soil/material assessed by the Contractor with DSC for reuse in embankment works, backfilling, grading, or restoration per approved specifications.
- Priority given to on-site reuse to minimize haul distance and disturbance, without compromising engineering or drainage requirements.
- Surplus/unsuitable material transported only to the approved disposal site (Section 2), avoiding cultivated land, drainage channels, and residences.

B. Solid Waste Collection and Segregation

- Labeled, covered receptacles provided at all active sites and worker facilities, segregating general non-hazardous waste, reusable material, and hazardous waste.
- Biodegradable waste composted/buried in designated pits; non-biodegradable waste transported to authorized municipal disposal facilities.
- Workers trained on segregation, storage, and disposal; signage displayed at all sites.

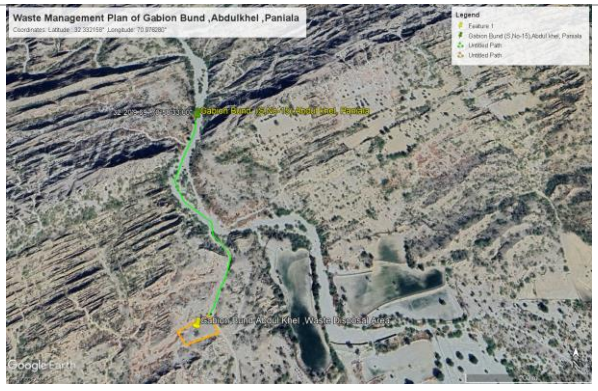
C. Hazardous Waste Management

- Fuel, oil, and lubricants stored in designated, secured areas with secondary containment; refueling/servicing conducted on impermeable surfaces away from drainage channels.
- Spill kits maintained at all storage/handling locations; spills immediately contained, cleaned, and reported per incident procedures.
- Used oil, filters, and oily rags stored in sealed containers and disposed of only through licensed handlers.
- Contractor maintains hazardous waste inventory and transfer records, available to Design and Supervision Consulting Firm and SIU ESS Team.

4. ESMP Monitoring Indicators

Parameter	Indicator	Frequency	Responsibility
Soil erosion	Visual erosion at embankment/gabion sites	Weekly & after significant rainfall	Contractor / DSC
Sediment/spoil disposal	Waste and spoil disposed only at approved sites	Weekly	Contractor
Waste disposal	Waste properly collected, segregated, disposed	Weekly	Contractor
Hazardous spills	Number of spills reported and remediated	Continuous	Contractor

Figure : Intervention-wise Waste Disposal Site Locations (Irrigation Department KMZ / Google Earth Records)



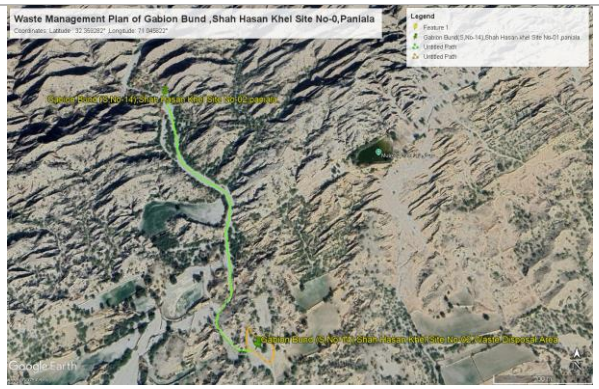
Gabion Bund – Abdul Khel



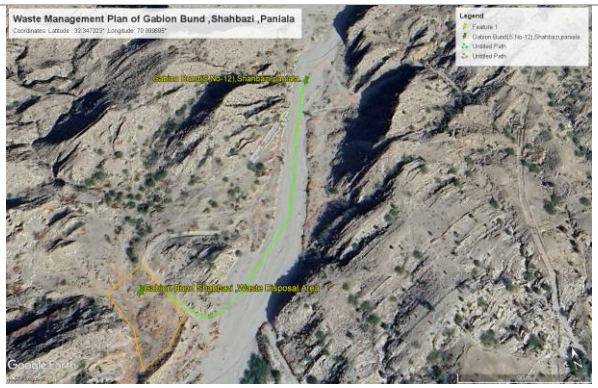
Gabion Bund – Katta Khel



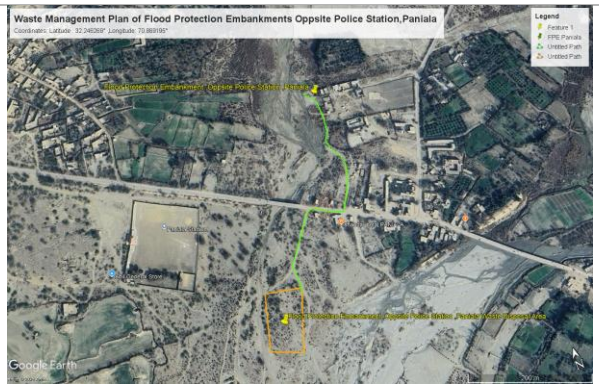
Gabion Bund – Shah Hasan Khel Site 1



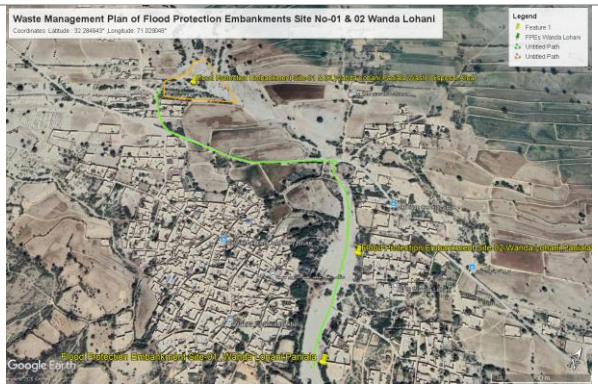
Gabion Bund – Shah Hasan Khel Site 2



Gabion Bund – Shahbazi



FPE – Paniala / Opposite Police Station



FPE – Wanda Lohani Sites 1 & 2

Note: Wanda Lohani FPE Sites 1 and 2 share the disposal location identified in the supplied KMZ. Distances shown in the Disposal Site Register are straight-line distances calculated from the supplied site and disposal coordinates; actual haul distance shall be confirmed against the approved access route before construction.

ANNEX 3-PLAN FOR PREVENTION OF LAND EROSION AND SOIL DISTURBANCE

Potential Impacts

Site preparation, excavation, earthworks, embankment construction, gabion installation, and material handling may give rise to the following risks:

- Soil erosion and slope instability: Exposed bare soil from excavation and grading is vulnerable to rainfall, runoff, and wind erosion, potentially causing rills, gullies, and slope instability; poorly compacted embankment fill may settle or fail during high-flow events.
- Erosion/undercutting and channel instability: Construction near ephemeral drainage channels may disturb channel beds/banks, with concentrated runoff around partially completed structures causing localized erosion/undercutting if not properly sequenced or protected.
- Sediment mobilization and water quality degradation: Disturbed soil may mobilize fine sediments during rainfall, increasing turbidity and downstream deposition, and affecting drainage channel performance.
- Soil compaction/disturbance outside the footprint: Uncontrolled machinery, vehicle, or worker movement outside designated areas may compact soil, damage vegetation, and increase erosion susceptibility.
- Improper spoil management: Uncontrolled placement of excavated material may obstruct drainage, increase sediment runoff, destabilize slopes, and alter local flow patterns during rainfall/flood events.

Mitigation Measures

A. Engineering and Structural Interventions

- Flood embankments constructed per approved drawings/specifications, with fill placed and compacted in controlled layers; erosion-prone sections protected via stone pitching, riprap, or vegetation per design; any settlement, cracking, or instability rectified promptly.
- Gabion bunds constructed at approved locations/dimensions, securely assembled and filled, with foundation, toe, and erosion/undercutting protection to reduce runoff velocity, dissipate flow energy, and stabilize drainage channels.
- Natural drainage paths maintained during construction; materials/spoil/waste kept out of active channels; temporary drainage or sediment-control measures used where needed and removed after construction unless part of the permanent design.

B. Construction Management Practices

- Work strictly confined to the approved footprint and designated areas, with boundaries clearly marked; unnecessary disturbance of adjacent land, vegetation, and drainage avoided.
- Major earthworks scheduled outside periods of intense rainfall/peak flows where practicable; work suspended during anticipated heavy rainfall or flash flooding, with exposed surfaces secured beforehand.
- Suitable excavated material reused for construction/backfilling/restoration; surplus/unsuitable material sent only to pre-approved disposal sites, kept out of drainage channels, agricultural land, and residential areas; stockpiles placed on stable ground to minimize erosion and dust.
- Disturbed areas progressively stabilized as construction advances; temporary work areas cleared, graded, and revegetated with locally suitable species upon completion.

C. Equipment and Access Management

- Machinery restricted to designated access/haul routes; regular inspections to verify compliance, with prompt restoration of any unauthorized damage.
- No parking, servicing, or refueling within active drainage channels or spill-risk locations.

E. Inspection and Corrective Action

The Contractor, under PID, DSC, and SIU ESS Team supervision, shall regularly inspect for erosion/gullying, slope instability, erosion/undercutting, sediment movement, improperly located spoil, drainage obstruction, unauthorized disturbance, and inadequate stabilization — with corrective measures implemented promptly and additional inspections conducted after significant rainfall or flood events.

ANNEX 4-OPERATION AND MAINTENANCE PLAN

Introduction

This O&M Plan covers the three (3) flood protection embankments (two at Wanda Lohani, one at Paniala near the Police Station) and five (5) gabion bunds (Abdul Khel, Shah Hassan Khel-1, Shah Hassan Khel-2, Katta Khel, and Wanda Shahbazi) constructed in Dera Ismail Khan District, KP, under Sub-Activities 1.1.2.2 and 1.1.2.4 of the Recharge Pakistan Project. The embankments provide protection against seasonal hill torrent flows and localized flooding through engineered earthworks and slope/toe protection, while the gabion bunds regulate runoff, reduce flow velocity and flood peaks, control erosion and sediment movement, and enhance groundwater recharge —

collectively estimated at approximately 373.15 million litres annually — improving resilience for surrounding communities, agricultural land, grazing areas, and drainage systems.
This Plan covers the project implementation/monitoring period 2027–2031; the structures have an estimated design life of ~30 years, subject to regular inspection, preventive maintenance, timely repair, and final approved engineering design and asset-management arrangements. It sets out the routine and periodic activities required to preserve structural integrity, maintain flood protection and flow regulation, manage erosion//undercutting/sediment/drainage issues, and ensure long-term sustainability of the interventions and the communities they protect.

Scope and Objectives

This Annex serves as the detailed O&M reference, with principal arrangements also reflected in the main ESMP monitoring section. The Plan aims to:

- Maintain the structural stability and functionality of the embankments and gabion bunds.
- Preserve embankment flood-reduction effectiveness per the approved design (quantified flood-extent figures to be confirmed by the Design and Supervision Consultant).
- Preserve gabion bund hydraulic and recharge function through regular maintenance and management of sediment, debris, erosion/undercutting, and flow obstructions (recharge estimates subject to final design/hydrological confirmation).
- Sustain vegetation/bioengineering measures for slope stabilization and erosion control.
- Protect natural drainage channels from erosion, erosion/undercutting, sediment buildup, and blockages.
- Ensure ongoing community participation in monitoring via CBOs and beneficiary communities.

Responsible Parties and Roles

Entity	Role
Design and Supervision Consulting Firm, Irrigation Department, KP	Lead authority for post-construction O&M; annual technical inspections; planning/implementing major repairs; maintaining structural functionality
WWF-Pakistan	Technical coordination, ecological monitoring, ESMP compliance, reporting to WWF-US and GCF
CBO/Local Community/Water-User Groups(WUGs)	Community-level observation and early reporting of damage, erosion, erosion/undercutting, sediment/debris accumulation, drainage obstruction, and unauthorized activities; support minor housekeeping. Major repairs remain with the Irrigation Department.

Key Maintenance Activities

A. Routine Bi-Annual Inspections: Pre-monsoon (April–May) to assess condition/preparedness, and post-monsoon (September–October) to identify damage from seasonal flood events, plus additional inspections after significant rainfall/flash floods. Findings documented with a prioritized action list; urgent defects addressed without delay.

B. Embankment Maintenance: Inspect for slope erosion, settlement/cracking, erosion/undercutting, damage to stone pitching/riprap, drainage obstruction, vegetation loss, and unauthorized activity. Repair eroded/settled sections, restore embankment profile, reset erosion-protection materials, clear drainage, and restore vegetation. Significant defects assessed by qualified personnel before repair.

C. Gabion Bund Inspection and Repair: Inspect all five sites for wire mesh damage/corrosion, tie failure, stone loss, basket settlement, foundation/toe/flank erosion/undercutting, excessive sediment/debris, and bypass flow. Repair/replace damaged mesh and stone fill; stabilize erosion/undercutting per engineering requirements. Remove sediment/debris only where it obstructs drainage or hydraulic performance — stable natural deposition left undisturbed.

D. Drainage and Flow Path Maintenance: Remove waste, debris, and excess sediment obstructing drainage; prevent unauthorized dumping; inspect areas of concentrated runoff or new erosion; stabilize localized erosion/undercutting, while avoiding disturbance of stable sections and existing

erosion-control vegetation.

E. Vegetation and Bioengineering Maintenance: Replace failed plantings, protect new vegetation during establishment, manage invasive species, and maintain adequate cover on stabilized slopes, using locally suitable/native species.

F. Erosion, Erosion/undercutting and Sediment Management: Inspect for rill/gully/bank erosion, foundation erosion/undercutting, toe erosion, bypass flow, sediment accumulation, and drainage pattern changes. Repair promptly using appropriate measures; remove sediment only where it significantly affects functionality. Removed material managed per the Waste Management Plan (Annex 2).

Key Monitoring Indicators

Indicator	Target	Frequency
Embankment Condition	No significant erosion, cracking, settlement or instability; defects addressed within agreed period	Bi-annual and after major floods
Gabion Bund structural integrity	All 5 structures stable and functional	Bi-annual and after major floods
Gabion Wire mesh/stone filling	No significant unrepaired damage/loss affecting performance	Bi annually
Erosion/undercutting and Erosion	No significant unaddressed erosion/undercutting/erosion	Bi-annual and after major floods
Drainage condition	No significant blockage affecting design performance	Pre- and Post-monsoon
Sediment/debris accumulation	No excessive accumulation affecting hydraulic performance	Pre- and Post-monsoon and after major floods
Community-reported maintenance	Issues recorded and referred for timely action	Continuous

Reporting and Plan Revision

Through 2031, the Irrigation Department, WWF-Pakistan/SIU, PES/DSC (within its supervision mandate), and relevant CBOs/WUGs shall monitor Plan implementation. Beyond the project period, the Irrigation Department remains the lead authority for O&M, supported by CBOs/WUGs for community-level observation. The Plan will be reviewed annually and updated as needed based on field conditions, structural performance during flood events, recurring maintenance needs, drainage/erosion pattern changes, lessons learned, and community concerns. Significant structural damage or recurring issues shall be referred for technical assessment and revision of the maintenance approach.

Monitoring and Responsibility

CBOs/WUGs support community-level observation and report emerging risks to the Irrigation Department/PES/SIU. Technical implementation and corrective works during construction remain the Contractor's responsibility under PES/DSC supervision and Irrigation Department oversight; post-construction major repairs remain with the Irrigation Department.

ANNEX 5: PICTURES OF SCREENING ACTIVITIES AND COMMUNITY CONSULTATIONS

Annexure 5: Pictures from Site/Field Visit of Village Wanda Lohani/ Kutti Khel Tehsil Paniyala, DI Khan District for 2 No. Flood Protection Embankments Activity	
	
1: Flood Protection Embankment Site # 1	2: Flood Protection Embankment Site # 1



3: Flood Protection Embankment Site # 2



4: Flood Protection Embankment Site # 2



5: Community Consultation with Males



6: Community Consultation with Males



7: Community Consultation with Males



8: Community Consultation with Males

Annexure 5: Pictures from Site/Field Visit of Paniyala, DI Khan District for 1 No. Flood protection Embankment Activity





2



3: Flood Protection Embankment Site # 2



4: Flood Protection Embankment Site # 2

Annexure 5: Pictures from Site/Field Visit to Village Abdul Khel 1 No Gabion Bund



1: Gabion Bund Site



2: Gabion Bund Site



3: Gabion Bund Site



4: Gabion Bund Site



7: Community Consultation with Males



8: Community Consultation with Males

Annexure 5: Pictures from Site/Field Visit to Village Katta Khel 1 No Gabion Bund



1: Gabion Bund Site



2: Gabion Bund Site



3: Gabion Bund Site



4: Gabion Bund Site



7: Community Consultation with Males



8: Community Consultation with Males

Annexure 5: Pictures from Site/Field Visit to Shah Hassan Khel 2 No. Gabion Bunds



1: Gabion Bund Site – 1



2: Gabion Bund Site – 1



3: Gabion Bund Site – 1



4: Gabion Bund Site – 1



5: Gabion Bund Site – 2



6: Gabion Bund Site – 2



7: Gabion Bund Site – 2



8: Gabion Bund Site – 2



9: Community Consultation with Males



10: Community Consultation with Males



11: Community Consultation with Males



12: Community Consultation with Males

Annexure 5: Pictures from Site/Field Visit Wanda Shahbazi 1 No. Gabion Bund



1: Gabion Bund Site



2: Gabion Bund Site



3: Gabion Bund Site



4: Gabion Bund Site



7: Community Consultation with Males



8: Community Consultation with Male

ANNEX 6: SITE VERIFICATION BY REVENUE STAFF:

A

OFFICE OF THE
ASSISTANT COMMISSIONER
PAHARPUR, DERA ISMAIL KHAN
Phone # 0966-775070 || acpaharpur@gmail.com

No. 6391 /AC/PHP Dated: 12 /05/2026

To:

The Deputy Commissioner
District Dera Ismail Khan

Subject: **REQUEST FOR VERIFICATION AND DEMARCATION OF LAND FOR CONSTRUCTION OF GABION BUNDS UNDER RECHARGE PAKISTAN PROJECT**

Reference of letter No.81/RP/Imi (KPK) dated 17-04-2026, on subject noted above.

In this regard the office of the Project Director, Recharge Pakistan Project, Irrigation Department, has requested verification and demarcation of land ownership regarding the proposed construction of Gabion Bunds in Abdul Khel Cluster. During the field visit and subsequent correspondence, the concerned Revenue staff conducted site verification and demarcation of the identified land in the presence of local representatives and relevant officials. During the inspection, it was observed that the proposed site mainly consists of riverbed/seasonal stream area and adjoining land. Necessary spot verification and boundary identification were carried out according to available revenue records and field position.

It is further submitted that the detailed report along with recommendations and site observations has been attached for kind perusal and further necessary action as desired please.

12/5/26
AC - PHP

Dr Muhammad Hamid Siddique
Assistant Commissioner
Tehsil & District Paharpur

ANNEX 7: NO OBJECTION CERTIFICATE (NoC) - GABION BUNDS

OFFICE OF THE EXECUTIVE ENGINEER/PROJECT DIRECTOR
RECHARGE PAKISTAN IRRIGATION DEPARTMENT
KHYBER PAKHTUNKHWA
Email: irrigationdivisionswtd@gmail.com

No.166/RP/Irri-(KPK) Dated: 08/09/2026

The Site Manager,
SIU WWF Recharge Pakistan,
D.I.Khan.
Email: hfaisal@wwf.org.pk

Subject: ISSUANCE OF NO-OBJECTION CERTIFICATE (NOC) AND FOREST DEPARTMENTAL CLEARANCE FOR (ACTIVITY 8): CONSTRUCTION OF 05 NOS. GABION BUNDS- ABDUL KHEL CLUSTER.

Reference: (1)-This office letter no. 159 /RP/Irri-(KPK) Dated: 04 /09/2026.
(2)- Executive Engineer Paharpur Irri: Dvn: D.I.Khan letter no.1451/1-M dt: 07.9.2026.
(3)- Divisional Forest Officer DIKhan Forest Dvn: DIKhan letter no.2691/G dt:08.9.2026.

With reference to the subject cited above, it is submitted that the **No Objection Certificate (NOC)** has been issued by the Executive Engineer, Paharpur Irrigation Division, D.I. Khan, vide his office letter referred to at Sr. No. 2 above, and **Departmental Clearance/Support from the Forest Department** has been obtained vide letter of the Divisional Forest Officer, D.I. Khan Forest Division, referred to at Sr. No. 3 above, in respect of the following works to be executed under the scheme titled **"Recharge Pakistan: Building Pakistan's Resilience to Climate Change through Ecosystem-Based Adaptation (EbA) and Green Infrastructure (GI) for Integrated Flood Risk Management Khyber Pakhtunkhwa (Irrigation Component)."**

Sub work (Activity 8): Construction of 05 Nos. Gabion Bunds- Abdul Khel Cluster
Package-I: Construction of Gabion Bunds at Katta Khel and Shahbazi Wanda.
Package-2: Construction of (02) Nos Gabion Bunds at Shah Hassan Khel.
Package-3: Construction of Gabion Bund at Abdul Khel.

In view of the above, the duly signed **NOC** from the Irrigation Department and **Departmental Clearance/Support** from the Forest Department pertaining to the above-mentioned Sub-Works are hereby forwarded for onward submission to the PMU, WWF-Recharge Pakistan, Islamabad, and incorporation into the respective ESMP documents of the corresponding activities/packages, for further necessary action, please.

Encl:
1. NOC (01) no.
2. Departmental Clearance/Support letter.(01) no.

Executive Engineer/Project Director
Recharge Pakistan Irrigation Department KPK

Copy for Information is forwarded to the:
1.Director/Superintending Engineer (South) Irrigation Department Merged Districts Peshawar. (Coordinator Recharge Pakistan Project). Email: directorirrigationmas@gmail.com
2.Senior Director, PMU WWF Recharge Pakistan, Islamabad. Email: mfhayat@wwf.org.pk
3.Coordinator Eco-system Based Adaptation PMU WWF Recharge Pakistan, Islamabad.
Email: nrashid@wwf.org.pk
4.Manager ESS & Safe guard PMU WWF Recharge Pakistan, Islamabad.
Email: smehmood@wwf.org.pk
5.Project Team Leader/Resident Engineer, PES Pvt. Ltd. Email: peskp44@gmail.com
6.Office File.

OFFICE OF THE EXECUTIVE ENGINEER
PAHARPUR IRRIGATION DIVISION D.I.KHAN

No. 1851 /1-M Dated: 07/09/2026

From,
The Executive Engineer,
Paharpur Irrigation Division,
D.I.Khan.

To,
The Executive Engineer/Project Director,
Recharge Pakistan Irrigation Department,
Khyber Pakhtunkhwa.

Subject: ISSUANCE OF NO OBJECTION CERTIFICATE (NOC) FOR THE EXECUTION OF WORKS WITHIN THE TERRITORIAL JURISDICTION OF PAHARPUR IRRIGATION DIVISION DERA ISMAIL KHAN.

Reference: The Executive Engineer/Project Director Recharge Pakistan Irrigation Department Khyber Pakhtunkhwa letter No. 159 /RP/IrH-(KPK) Dated: 04 /09/2026.

Reference is invited to your office letter on the subject cited above regarding the issuance of an NOC under the scheme titled **"Recharge Pakistan: Building Pakistan's Resilience to Climate Change through Ecosystem-Based Adaptation (EbA) and Green Infrastructure (GI) for Integrated Flood Risk Management Khyber Pakhtunkhwa (Irrigation Component)."**

The details of the Sub-works for which the NOC is being issued are as follows:

S N	Sub work/ Package	Activity	Location	Drain/Nullah/ Hill Torrent	Coordinates (Deg)
1	**(Activity 8): Construction of 05 Nos. Gabion Bunds- Abdul Khel Cluster.**				
i	Construction of Gabion Bunds at Katta Khel and Shahbazi Wanda. (Package-1)	G.Bund	Katta Khel Paniala Shahbazi Paniala	Katta Khel Khwar Shahbazi Khwar	32.372886 71.056931 32.348756 71.0016
ii	Construction of (02) Nos Gabion Bunds at Shah Hassan Khel. (Package-2)	G.Bund	Shah Hassan Paniala	Shah Hassan Khel Khwar	32.365 71.043 32.358 71.025
iii	Construction of Gabion Bund at Abdul Khel. (Package-3)	G.Bund	Abdul Khel Paniala	Abdul Khel Khwar	32.336025 70.975833

OFFICE OF THE EXECUTIVE ENGINEER
PAHARPUR IRRIGATION DIVISION D.I.KHAN

No. 1852 /1-M Dated: 07/09/2026

With reference to the subject cited above, it is stated that, following a detailed site evaluation and engineering assessment by the field formation of this Division, the technical feasibility of the proposed intervention(s) has been duly assessed. The proposed work(s) falls within the territorial jurisdiction of this Division and may be undertaken subject to the applicable provisions of law and the following terms and conditions:

1. The execution of the work shall not adversely affect or obstruct the natural flow or hydraulic capacity of the existing Nullah/Drain/Hill Torrent system, or adversely affect its operation and maintenance or other irrigation infrastructure.
2. The proposed work shall be executed with due care to avoid any adverse impact on the Nullah/Drain/Hill Torrent and its associated irrigation infrastructure.
3. The waterway of the Nullah/Drain/Hill Torrent shall be kept free from any obstruction, including excavated earth, debris, construction materials, or machinery, particularly during the monsoon/flood season.
4. The proposed work shall be executed in accordance with the approved design and applicable engineering standards and requirements of the Irrigation Department.
5. The executing agency/contractor shall maintain necessary coordination with the concerned Irrigation Division during execution of the work.

Accordingly, in compliance with the applicable provisions of the Khyber Pakhtunkhwa River Protection Ordinance, 2002, as amended by the Khyber Pakhtunkhwa River Protection (Amendment) Act, 2014, particularly Section 2(jj), which defines "NOC" as a No Objection Certificate from the Irrigation Department, and Section 5(2), which requires an NOC prior to the commencement of flood protection works on rivers, streams, nullahs, drains, and water channels, this **No Objection Certificate (NOC)** is hereby issued for **Activity-8: Construction of 05 Nos. Gabion Bunds – Abdul Khel Cluster**, at the specified location(s) and subject to the terms and conditions stipulated herein. This NOC is strictly limited to the **above-mentioned 05 (Five) works and their respective locations** and shall not be construed as authorization or approval for any other work, site, location, or activity.

Executive Engineer

No Objection Certificate by Forest Department – Gabion Bunds (Shahbazi, Shah Hassan Khel 1,2, Paniyala & Katta Khel)

OFFICE OF THE DIVISIONAL FOREST OFFICER
D.I. KHAN FOREST DIVISION D.I. KHAN
Email: dfodik@gmail.com Phone: 0966-9280181
Address: Bungalow # 20 - Allama Iqbal Road D.I. Khan Cantt.

No 2691 /G Dated 8/9 /2026

To,

The Site Implementation Unit,
Recharge Pakistan Project,
Dera Ismail Khan.

Subject: **DEPARTMENTAL SUPPORT FOR THE PROPOSED CONSTRUCTION OF FIVE (05) GABION STRUCTURES UNDER RECHARGE PAKISTAN WITHIN / ADJACENT TO SHEIKH BADIN DESIGNATED FOREST, MOUZA SHEIKH BADIN.**

Memo: - Reference this office letter No. 11104/DFO-DIK dated 23-06-2026 addressed to the Deputy Commissioner, Dera Ismail Khan (copy enclosed).

This is with reference to the proposal of Recharge Pakistan for the construction of five gabion structures in Mouza Sheikh Badin. This office is pleased to convey the considered views of this Department directly to your Unit.

1. At the outset, this Department places on record its full appreciation of, and support for, the Recharge Pakistan initiative. The Sheikh Badin tract is an arid, water-deficient landscape where erosion, surface run-off and depletion of the groundwater table remain the principal constraints on ecological recovery. Water-harvesting and retention structures of the nature proposed — gabion bunds designed to impound and conserve run-off, check erosion and recharge the aquifer — address precisely these constraints and are of paramount importance for the ecological revitalization of the area. Their expected contribution to soil moisture retention, natural regeneration, augmentation of forest cover, restoration of degraded land and enhancement of biodiversity is fully in harmony with the conservation mandate of this Department, which accordingly views the proposed intervention with favor.

2. Pursuant to the request of the Deputy Commissioner, a boundary verification and demarcation exercise was carried out by this office in respect of the five proposed sites with reference to their GPS coordinates and the demarcated limits of Sheikh Badin *Designated* Forest. The results are tabulated below (map annexed):

S.No	Scheme / Site	Village	Latitude	Longitude	Status w.r.t. Designated Forest
1	Gabion Bund (S.No-1)	Abdul Khel, Paniala	32°20'11.14"N	70°58'33.14"E	Falls outside the Designated Forest
2	Gabion Bund	Shahbazi	32°20'55.52"N	71°00'05.76"E	Falls inside the Designated Forest
3	Gabion Bund (S.No-13)	Shahl-Hasan Khel, Paniala	32°21'28.80"N	71°01'30.00"E	Falls inside the Designated Forest
4	Gabion Bund (S.No-14)	Shahl-Hasan Khel, Paniala	32°21'54.00"N	71°02'34.80"E	Falls inside the Designated Forest
5	Gabion Bund	Katta Khel	32°22'22.39"N	71°03'24.95"E	Falls inside the Designated Forest

3. Of these, one site (S.No-1, Abdul Khel) lies outside the Designated Forest, while the remaining four (S.No 2 to 5) fall within its demarcated boundaries. This distinction has already been brought to the notice of the Deputy Commissioner vide the letter cited above. Insofar as the objectives of the initiative are concerned, however, this Department remains wholly supportive of the intervention at all sites and is keen to see it contribute to the restoration of the tract.

4. To enable this office to associate itself meaningfully with the initiative and to plan its own contribution to the restoration of the area, clarification on the following would be appreciated:

   (a) **Post-completion arrangements.** The feasibility study and project documents may kindly be shared, indicating the intended arrangement for the ownership, operation and maintenance of the gabion structures after completion — in particular whether the structures are to be handed over to this Department, retained by the Project, or vested in the community — and the role envisaged for the Forest Department in their subsequent upkeep, desilting and periodic repair.

   (b) **Plantation activity.** The feasibility study is understood to propose a plantation component associated with the structures. This office would appreciate details of the proposed species, planting design, area and location, sourcing of planting stock, implementation modality, and the period of aftercare envisaged, together with the role contemplated for this Department in its execution. Given the location of the sites within an area under active restoration, it is important that the species composition and planting design conform to the silvicultural prescriptions of the Division, and this office would be glad to provide the requisite technical guidance in this regard.

5. This office reaffirms its appreciation of the Recharge Pakistan initiative and looks forward to a close and productive partnership in the restoration of the Sheikh Badin landscape.

Encl: (i) Copy of letter No. 11104/DFO-DIK dated 23-06-2026;
(ii) Verification and demarcation map.

Divisional Forest Officer
DIKhan Forest Division
DIKhan

No. /G
Copy forwarded to the Conservator of Forests, Southern Circle, Bannu, for information please.

Divisional Forest Officer
DIKhan Forest Division
DIKhan.

OFFICE OF THE EXECUTIVE ENGINEER/PROJECT DIRECTOR
RECHARGE PAKISTAN IRRIGATION DEPARTMENT
KHYBER PAKHTUNKHWA
Email: irrigationdivisionswtd@gmail.com

No.171/RP/Irri-(KPK) Dated: 14/09/2026

The Site Manager,
SIU WWF Recharge Pakistan,
D.I.Khan.
Email: hfaisal@wwf.org.pk

Subject: RESPONSE TO DFO DIK FOREST DVN: DEPARTMENTAL SUPPORT FOR THE PROPOSED CONSTRUCTION OF FIVE (05) GABION STRUCTURES UNDER RECHARGE PAKISTAN WITHIN/ADJACENT TO SHEIKH BADIN DESIGNATED FOREST, MOUZA SHEIKH BADIN.

Reference:

1. DFO, D.I. Khan Forest Division D.I.Khan Letter No. 2691/G dated 08.09.2026.
2. Your email dated 14.09.2026.

With reference to the above-mentioned correspondence, the clarification sought by the Divisional Forest Officer, D.I. Khan Forest Division, vide Para 4(a) and 4(b) of his letter no. cited above, has been examined in the light of the provisions of the Grant Agreement governing the implementation and subsequent operation and maintenance of the Recharge Pakistan interventions.

The formal response to the queries raised by the Forest Department is furnished below for onward submission to the concerned office:

1. Post-Completion Arrangements – Para 4(a).

The proposed gabion structures form part of the Recharge Pakistan interventions aimed at runoff management, erosion control, water harvesting, and groundwater recharge. As provided under the Operations and Maintenance (O&M) provisions of the Grant Agreement (Pages 42–43), the Provincial Irrigation Department shall undertake the regular operation and maintenance of the project interventions throughout the designed project lifespan through its existing resources and infrastructure, with support from the Water User Groups (WUGs) and Watch & Ward Systems (W&Ws)/VDC.

Accordingly, the operation and maintenance of the gabion structures, including necessary periodic maintenance, repairs and protection, shall be undertaken under the supervision of the Provincial Irrigation Department in accordance with the approved O&M arrangements.

The Grant Agreement further provides for the development and implementation of an O&M Plan by the Irrigation Department, in coordination with the Forest Department and in accordance with the approved O&M arrangements, to ensure that the project interventions remain functional and achieve their intended adaptation impact throughout the project lifespan.

2.Plantation Activity – Para 4(b).

The plantation interventions under the Recharge Pakistan Project will be implemented in accordance with the design criteria and plantation methodology specified in the approved project design. The relevant recommendations of the Ecological Study included as Annex-3 of the Design Report, including the recommended plantation layout, survival measures and maintenance requirements, will also be duly considered during implementation.

The Site Implementation Unit WWF-RP DIK has already shared the detailed Design Report with the concerned Forest Department for information, review and record.

Following completion of the project, where feasible, consultation with the Forest Department will be undertaken for the operation and maintenance and upkeep of the plantation interventions, with a view to supporting their proper growth, survival and long-term improvement through appropriate measures.

Executive Engineer/Project Director
Recharge Pakistan Irrigation Department KPK

Copy for Information is forwarded to the:

1.Director/Superintending Engineer (South) Irrigation Department Merged Districts Peshawar. (Coordinator Recharge Pakistan Project). Email: directorirrigationmas@gmail.com
2.Senior Director, PMU WWF Recharge Pakistan, Islamabad. Email: mfhayat@wwf.org.pk
3.Coordinator Eco-system Based Adaptation PMU WWF Recharge Pakistan, Islamabad.
Email: nrashid@wwf.org.pk
4.Manager ESS & Safe guard PMU WWF Recharge Pakistan, Islamabad.
Email: smehmood@wwf.org.pk
5.Project Team Leader/Resident Engineer, PES Pvt. Ltd. Email: peskp44@gmail.com
6.Office File.

Executive Engineer/Project Director
Recharge Pakistan Irrigation Department KPK

ANNEX 8: TERMS OF PARTNERSHIP (TOP) with Community-Flood Protection Embankments

OFFICE OF THE EXECUTIVE ENGINEER/PROJECT DIRECTOR
RECHARGE PAKISTAN IRRIGATION DEPARTMENT
KHYBER PAKHTUNKHWA
Email: irrigationdivisionswtd@gmail.com

No.163/RP/Irri-(KPK) Dated: 07/09/2026

The Site Manager,
SIU WWF Recharge Pakistan,
D.I.Khan.
Email: hfaisal@wwf.org.pk

Subject: EXECUTED TERMS OF PARTNERSHIP (ToP) DEEDS FOR INCORPORATION IN THE RELEVANT ESMP DOCUMENTS.

With reference to the subject cited above, it is submitted that the **ToP Deeds** between the Project Director, Recharge Pakistan, Irrigation Department, Khyber Pakhtunkhwa, and the respective private landowners have been duly executed on **05.09.2026** in respect of the following activities:

Sub work (Activity-6): Construction of Flood Protection Embankments at Paniala and Wanda Lohani, Distt: D.I.Khan.

1. **Package-I:** Construction of Flood Protection Embankment at Paniala.
2. **Package-II:** Construction of 02 No. Flood Protection Embankments at Wanda Lohani.

In view of the above, the duly signed and executed ToP Deeds pertaining to the above-mentioned activities are hereby forwarded to you for onward submission to PMU, WWF–Recharge Pakistan, Islamabad, for incorporation into the respective ESMP documents of the corresponding activities.

Encl:
Executed TOP Deeds (02) nos.

Executive Engineer/Project Director
Recharge Pakistan Irrigation Department KPK

Copy for Information is forwarded to the:
1.Director/Superintending Engineer (South) Irrigation Department Merged Districts Peshawar. (Coordinator Recharge Pakistan Project). Email: directorirrigationmas@gmail.com
2.Senior Director, PMU WWF Recharge Pakistan, Islamabad. Email: mfhayat@wwf.org.pk
3.Coordinator Eco-system Based Adaptation PMU WWF Recharge Pakistan, Islamabad.
Email: nrashid@wwf.org.pk
4.Manager ESS & Safe guard PMU WWF Recharge Pakistan, Islamabad.
Email: smehmood@wwf.org.pk
5.Project Team Leader/Resident Engineer, PES Pvt. Ltd. Email: peskp44@gmail.com
6.Office File.

Site 1: Paniyala



Site 2: Wandha Lohani

شراکت نامہ

(رضاکارانہ فراہمی اراضی، قدرتی/ماحولیاتی بنیادوں پر گرین انفراسٹرکچر کے قیام، تحفظ اور پائیدار انتظام کے لیے)

یہ شراکت نامہ آج مورخہ 05-09-2026 بمقام واڑہ لوہاری سیداں از طرف محترمہ نجیبہ بانو خواجہ پروجیکٹ ڈائریکٹر ریچارج پاکستان ریجنریشن انیشی ایٹو تحت مطرح جامل، صوبہ پنجاب / اخوند، صفحہ ذیل دستخط کنندگان سماجی تنظیم واڑہ لوہاری ۔۔۔۔۔ (فریق دوم) کے درمیان درج ذیل شرائط پر طے پایا ہے۔

چونکہ محترمہ آبی ذخائر بحالی منصوبہ کے تحت زیر زمین پانی کی بحالی اور سیم و تھور کی روک تھام کے لیے قدرتی ڈھلوانوں پر مشتمل گرین انفراسٹرکچر کی تعمیر ضروری ہے، اور فریق دوم اس مقصد کے لیے اپنی رضامندی ظاہر کرتا ہے، لہٰذا دونوں فریق درج ذیل شرائط پر متفق ہیں۔

شق 1۔ مقصد

اس شراکت نامے کا مقصد حفاظ مقام واڑہ لوہاری پر گرین انفراسٹرکچر فولاد پر مشتمل ایک پشتہ سابت 1,2 کی تعمیر کے لیے درکار اراضی کا رضاکارانہ طور پر حصول، تحفظ، محفوظ اور مستدل استعمال کو یقینی بنانا ہے۔

شق 2۔ رضاکارانہ رضامندی

فریق دوم اقرار کرتا ہے کہ اس نے یہ شراکت نامہ اپنی مرضی، مکمل معلومات اور کسی جبر کے بغیر، مع خوش دلی پر دستخط کیے ہیں۔

شق 3۔ رضاکارانہ فراہمی اراضی

فریق دوم اس بات کی تصدیق کرتا ہے کہ اس منصوبہ کیلئے درکار اراضی بلا کسی معاوضہ، رضاکارانہ طور پر فراہم کر رہا ہے۔ لہٰذا یہ شراکت نامہ کسی بھی صورت اراضی کے خرید و فروخت کا معاہدہ تصور نہیں ہوگا۔

مزید برآں، اس منصوبے کے نتیجے میں کسی ذریعہ معاش کی جزوی یا کلی بحالی معافی نہیں دیا گیا ہے، لہٰذا کسی بھی قسم کی غیر رضاکارانہ منتقلی واقع نہیں ہوگی۔

شق 4۔ اراضی کی قانونی حیثیت

یہ شراکت نامہ زمین کی ملکیت، لیز یا رہن، خواہ باکی دوسرے قانونی حق کی منتقلی تصور نہیں ہوگا، اور زمین کی قانونی ملکیت ہر حال فریق دوم کے پاس رہے گی، قرار دے گی۔

شق 5۔ تعمیر اور بحالی

فریق دوم محترمہ آبی ذخائر بحالی منصوبہ کے ٹھیکیداروں، انجینئروں کو منصوبہ کے مزدوروں، تعمیر، گرین بحالی سامان، مزدور، مشینری اور ہر طرح کے تعمیراتی سامان تک رسائی فراہم کرے گا۔

شق 6۔ دیکھ بھال کے تحفظ

فریق دوم منصوبہ کے تحت تعمیر شدہ ڈھانچے کی دیکھ بھال میں مدد کرے گا، جس میں لگائے گئے درخت، پودوں اور گھاس بحالی کے پودوں کا تحفظ شامل ہے، اور تحفظ سے مراد یہ نہیں کہ کوئی نقصان نہیں پہنچے گا، اور کسی بھی قسم کی تجاوزات، غیر مجاز تعمیر، کٹائی، چرائی، جلانے یا نقصان دہ سرگرمی کی اجازت نہیں دے گا، جس سے منصوبہ متاثر ہو۔

شق 7۔ عوامی سفارت

منصوبہ کے تحت تعمیر شدہ انفراسٹرکچر کو صرف اور صرف عوامی سفارت کیلئے ہوگا۔ فریق دوم اس بات کی تصدیق کرتا ہے کہ اس کی کسی قسم کی ذاتی ملکیت، فروخت، گرین بحالی منصوبہ یا انفراسٹرکچر کی عوامی تحفظ کے لیے استعمال نہیں کرے گا اور نہ ہی کرنے دے گا۔

شق 8۔ فصلی اراضی پر گرین انفراسٹرکچر کی تعمیر اور متبادل آبادی کی رسائی

اگر کسی گرین انفراسٹرکچر کی تعمیر کسی فصلی اراضی کی آبی نکاسی کی روانی کو متاثر کرتی ہے، تو فریق دوم کو متبادل آبی راستہ فراہم کیا جائے گا۔ اگر گرین انفراسٹرکچر کی تعمیر اس کی فصلی اراضی پر، جس میں پانی جمع ہوتا ہے، ہوگی، تو فریق دوم کو متبادل آبی راستہ فراہم کیا جائے گا۔ اگر گرین انفراسٹرکچر کی تعمیر، تکمیل، آبی ذخائر اور استعمال کے دوران متاثر کی گئی کے پانی کی مقدار یا معیار، متاثرہ یا مقصد میں مجاز، ہونے والے نقصان، رسائی میں کسی قسم کی رکاوٹ، یا مقصد متاثرہ کے لیے ہوگا۔ اراضی کا کوئی اور متبادل کے لیے ہوگا۔ اور متاثرہ کو اس نقصان کا ازالہ کرنے کا حق ہوگا۔

شق 9۔ معاہدہ کی مدت

یہ شراکت نامہ اطلاق کی تاریخ سے نافذ العمل ہوگا اور منصوبہ کے تحت تعمیر ہونے والے اثاثوں کی متوقع آبادی مدت یعنی کم از کم تیس (30) سال رہے گی۔ یہ شراکت نامہ اس وقت تک برقرار رہے گا جب تک اثاثوں کی مکمل فرض مدت کے مطابق معاہدہ ختم نہ ہو جائے، یا فریقین کے مابین تحریری طور پر باہمی رضامندی سے ختم نہ کر دیا جائے۔

فریق دوم اس کے قانونی ورثاء، جانشین، نامزد کردہ یا دیگر کسی بھی اور اراضی کے حصے کے مالکان اس شراکت نامہ کی شرائط کے پابند ہوں گے۔

شق 10۔ اراضی کی منتقلی

اگر معاہدہ کی مدت کے دوران اراضی کی قانونی طریقے سے کسی دوسرے شخص کو منتقلی ہو تو فریق دوم کے بنک کے ساتھ ساتھ فریق دوم کو اس منتقلی سے قبل تحریری طور پر آگاہ کرے گا۔

شق 11۔ خلاف ورزی

فریق دوم کی طرف سے معاہدہ کی کسی بنیادی شرط کی خلاف ورزی، بشمول منصوبہ کو نقصان پہنچانے کی صورت میں، فریق اول قابل اطلاق قانون کے مطابق مناسب قانونی چارہ کار کا حق دار ہوگا۔

شق 12۔ دستبرداری

یہ شراکت نامہ صرف فریق اول اور فریق دوم کے درمیان ہے۔ کسی بھی بیان، گفتگو یا عمل کو اس معاہدہ میں شامل نہیں تصور کیا جائے گا۔ کسی بھی ترمیم، تبدیلی یا دستبرداری کے لیے تحریری طور پر دونوں فریقوں کے دستخط ضروری ہوں گے۔

شق 13۔ حلفیہ اقرار

فریق دوم اقرار کرتا ہے کہ متعلقہ اراضی کا قانونی مالک یا اختیار نامہ ہولڈر ہے اور یہ کہ اس کے پاس اس اراضی کو منتقل کرنے کا مکمل اختیار ہے۔ فریق دوم نے تمام قانونی دستاویزات کو صرف پڑھ لیا ہے یا اسے پڑھ کر سنایا گیا ہے، اور وہ اس کی تمام شرائط سے اچھی طرح واقف ہے۔

شق 14۔ تنازعہ اور قابل اطلاق قانون

کسی بھی اختلاف کی صورت میں پہلے فریق اول اور فریق دوم باہمی مذاکرات کے ذریعے معاملہ حل کرنے کی حتی الوسع کوشش کریں گے۔ بصورت دیگر معاملہ پاکستان کے متعلقہ قوانین کے تحت طے کیا جائے گا۔

نمبر شمار	نام	ولدیت / شوہر کا نام	شناختی کارڈ نمبر	رابطہ نمبر	دستخط / انگوٹھا
1	ہدایت اللہ	حاجی مولا اللہ			ہدایت اللہ
2	محمد اللہ	ہدایت اللہ			محمد اللہ
3	رحم الدین	جمال الدین			
4	فیاض احمد	مغل احمد			
5	محمد اسلم خان	اللہ داد خان			
6	محمد نعیم خان	شاہ جہان			عمر خان
7	بہرام خان	عبدالکریم			
8	نواز خان	عمر خان			لوا زکان
9	مہتاب دین	میر گل			

نام	اشرف خان گنڈاپور
برائے	پروجیکٹ ڈائریکٹر، ریچارج پاکستان ریجنریشن انیشی ایٹو تحت محمد بانو خواجہ
دستخط	
مہر	PROJECT DIRECTOR RECHARGE PAKISTAN REGENERATIVE INITIATIVE - KHWAJA FOUNDATION
بتاریخ	05 ستمبر 2026

فریق دوم

دستخط، انگوٹھا / انگوٹھے کے نشان / دستخط کنندگان

نمبر شمار	نام	ولدیت / شوہر کا نام	شناختی کارڈ نمبر	رابطہ نمبر	دستخط / انگوٹھا
1	شاہ جہان	عمر خان			شاہ جہان
2	خالد نواز	نواز خان			
3	نجیب اللہ	سعد اللہ خان			نجیب اللہ

دستخط، انگوٹھا / انگوٹھے کے نشان / دستخط کنندگان

نمبر شمار	نام گواہ / فریق اول	ولدیت / شوہر کا نام	شناختی کارڈ نمبر	رابطہ نمبر	دستخط / انگوٹھا
1	فہیم اللہ	سعد اللہ			
2	نام گواہ / فریق دوم	ولدیت / شوہر کا نام			دستخط / انگوٹھا
	شاہ جہان	عمر خان			شاہ جہان

تفصیل ملکیت / کوائف اراضی

نمبر شمار	شناختی تفصیل
الف	اراضی کی تفصیل (کسرہ، کھیوٹ نمبر، موضع، تحصیل، ضلع)
ب	حدود چہار اطراف

TOP-English Version:

TERMs OF PARTNERSHIP

(Voluntary Provision of Land for the Establishment, Protection and Sustainable Management of Green Infrastructure Based on Natural/Environmental Principles)

This Deed of Partnership is made on this _____ day of _____ at _____ between the Irrigation Department, Government of Khyber Pakhtunkhwa, through the Project Director, Recharge Pakistan, Irrigation Department, hereinafter referred to as the "First Party"; and Mr./ Mst./ the concerned circle of landowners _____, resident(s) of _____, hereinafter referred to as the "Second Party", on the following terms and conditions.

Whereas the Irrigation Department, Government of Khyber Pakhtunkhwa, is implementing environmentally appropriate Green Infrastructure in the public interest to reduce flood risks, conserve natural resources, improve groundwater conditions, and promote ecosystem-based measures; and whereas the Second Party is willing to cooperate voluntarily for this purpose, the Parties agree on following terms and conditions:

Clause 1. Purpose

The purpose of this Deed is to ensure at the relevant location _____ the Green Infrastructure _____ environmentally appropriate construction, protection, monitoring, repair, and sustainable use.

Clause 2. Voluntary Consent

The Second Party declares that this Deed has been executed willingly, with full information, and without any pressure, coercion, intimidation, misrepresentation, or undue influence of any kind.

Clause 3. Voluntary Provision of Land

The Second Party confirms that the land, or the required relevant portion thereof, needed for the Project is being provided voluntarily. Accordingly, this Deed shall not, under any circumstances, be construed as compulsory acquisition, purchase, or occupation of the land.

Furthermore, the Project shall not result in the involuntary physical relocation of any person or family, economic or residential displacement, or any other form of non-voluntary resettlement.

Clause 4. Legal Status of the Land

This Deed shall not be construed as a transfer of land ownership, possession, lease, mortgage, gift, or any other legal right. The legal ownership of the land shall remain vested in the Second Party.

Clause 5. Construction and Access

The Second Party shall provide the Irrigation Department, its authorized representatives, consultants, and contractors access to the relevant site for survey, design, construction, supervision, inspection, repair, rehabilitation, and assessment of the Project.

Clause 6. Protection of the Structure

The Second Party shall not damage any structure constructed under the Project, including planted trees, plants and grasses, water flows, protective boundaries, or related facilities. The Second Party shall not carry out encroachment, unauthorized construction, excavation, demolition, or any activity that may adversely affect the Project.

Clause 7. Public Interest

The infrastructure constructed under the Project shall be used solely for public benefit. The Second Party shall not claim, and shall not be entitled to claim, any exclusive ownership, sale, rental income, financial benefit, or individual right over it.

Clause 8. Construction of Green Infrastructure on Private Land and Access for the Local Community

Where Green Infrastructure is constructed on land privately owned by an individual, the owner of that land shall agree and be bound that, notwithstanding construction on privately owned land, the water stored in such Green Infrastructure shall be available to all eligible members of the relevant local community without discrimination and on a fair and impartial basis.

During the construction, completion, operation, and use of the Green Infrastructure, the landowner shall not place any unjustified obstruction, interference, or discriminatory restriction upon the local community's lawful right of use, particularly equitable access to stored water. The landowner shall also provide an access route for local residents and their livestock.

Clause 9. Duration of the Agreement

This Deed shall take effect from the date of signature and shall remain valid for the expected useful life of the structure constructed under the Project, which shall be not less than thirty (30) years, and in any event for as long as the structure exists and remains usable for its intended purpose.

The Second Party, its legal heirs, successors, representatives, and subsequent owners of the land shall remain bound by the terms of this Deed.

Clause 10. Transfer of Land

If, during the term of this Agreement, the land is transferred to another person through any lawful means, the Second Party shall notify both the new owner and the First Party in writing before such transfer.

Clause 11. Breach

If the Second Party breaches any fundamental condition of this Agreement, provides false information, or causes damage to the Project, the First Party shall be authorized to take appropriate legal or administrative action in accordance with applicable law.

Clause 12. Liability

This Deed is exclusively between the First Party and the Second Party. Any person or organization providing financial, technical, or implementation support, including consultants, contractors, or their employees, shall not be deemed a party or guarantor to this Agreement, nor shall any legal, contractual, or financial liability arise against them under this Agreement.

Clause 13. Declaration on Oath

The Second Party declares that it is the lawful owner of the relevant land or a legally authorized representative. Where required by law, the prior consent of all co-owners or other relevant right-holders has been obtained. The Second Party has read all terms, or has had them read aloud, has understood them, and has voluntarily signed this Deed.

Clause 14. Dispute Resolution and Applicable Law

In the event of any dispute, the First Party and the Second Party shall first make every possible effort to resolve the matter through mutual negotiations. Failing such resolution, the matter shall be submitted to the competent authority or court having jurisdiction in accordance with the applicable laws of Pakistan and the Province of Khyber Pakhtunkhwa.

FIRST PARTY

Name:
Project Director, Recharge Pakistan, Irrigation Department, Khyber Pakhtunkhwa
Signature:
Official Seal:
Date:

SECOND PART

SIGNATURES OF THE CONCERNED LANDOWNERS / RESIDENTS OF THE AREA

Name	Parentage / Spouse Name	CNIC No.	Contact No.	Signature / Thumb Impression

Name	Parentage / Spouse Name	CNIC No.	Contact No.	Signature / Thumb Impression

SIGNATURES OF THE CONCERNED LANDOWNERS / RESIDENTS OF THE AREA

Name	Parentage / Spouse Name	CNIC No.	Contact No.	Signature / Thumb Impression

SIGNATURES OF WITNESSES

Witness Name First Party	Father/ Spouse Name	CNIC No.	Contact No.	Signature / Thumb Impression
Witness Name Second Party	**Father/ Spouse Name**	**CNIC No.**	**Contact No.**	**Signature / Thumb Impression**

DETAILS OF ATTACHED DOCUMENTS

Annexure No.	Type of Document
A	Land particulars (Khasra, Khatooni, area, mouza, tehsil, district)
B	Site Plan / Map

ANNEX 9: SAFEGUARD INCIDENT REPORTING TEMPLATE:

1. **Incident Report Details**

   Date of Incident: _____ Time of Incident: _____

   Specific Location: _____

2. **Incident Category (Select the primary risk area as identified in the Safeguard Screening)**

   ☐ Hazardous Environment (harm caused by local wildlife or environmental health risks)

   ☐ Construction & Site Hazards (accidents related to the construction work and materials)

Community Exposure to Works (risk or causes harm to local community members)

3. **Nature of Incident (Check the specific event that occurred)**

   If Hazardous Environment:

   ☐ Encounter or injury with poisonous animals (e.g., snakes, scorpions)

   ☐ Exposure to disease vectors (e.g., mosquitoes, flies near stagnant water)

   If Construction & Site Hazards:

   ☐ Incident with construction materials (cement, aggregates, steel)

   ☐ Incident near/on unstable slopes (landslide, slip, collapse)

   ☐ Drowning or near-drowning hazard in canals

   If Community Exposure to Works:

   ☐ Injury from loading/unloading materials

   ☐ Injury from machinery operations

   ☐ Fall into an unsecured excavated area

   ☐ Fuel storage/usage hazard affecting the community

   ☐ Electrical use hazard affecting the community

4. **Affected Party**

   ☐ Project Worker / Staff

   ☐ Community Member

   ☐ Other (Please specify):

5. **Description of the Incident**

   (Provide a clear and detailed account of what happened, the sequence of events, and contributing factors.)

6. **Immediate Actions Taken**
   (Describe immediate response: first aid, stopping work, area secured, etc.)

7. **Proposed Corrective and Preventive Actions**
   (Steps to address root causes and prevent recurrence)

8. **Incident Report Completed By:**
   Name: _____ Role: _____

ANNEX 10: LABOUR MANAGEMENT PROCEDURE (LMP)

1. Purpose and Scope

This Labour Management Procedure devised keeping in line with Khyber Pakhtunkhwa Payment of Wages Act, 2013 applies to all direct, contracted, subcontracted, consultant, and temporary workers engaged under the project. It establishes requirements for fair labour practices, safe working conditions, timely wage disbursement, non-discrimination, grievance management, and compliance with applicable labour laws and project safeguard requirements.

2. Recruitment, Employment and Equal Opportunity

Recruitment and employment shall be transparent, merit-based, and free from discrimination. Equal opportunity and equal pay for equal work shall be ensured regardless of gender, religion, ethnicity, disability, age, or other protected characteristics.

3. Prohibition of Child and Forced Labour

The project strictly prohibits child labour, forced labour, bonded labour, trafficked labour, and any other form of labour exploitation.

4. Worker Conduct, Health, Safety and Grievance Management

All workers shall comply with the Code of Conduct, which promotes respectful behavior, prevention of harassment and Sexual Exploitation, Abuse and Harassment (SEAH), non-discrimination, and protection of community members. Workers shall be provided with safe working conditions, including access to drinking water, sanitation facilities, first aid, personal protective equipment (PPE), reasonable working hours, and timely payment of wages. The project's Grievance Redress Mechanism (GRM) shall remain accessible to all workers to raise concerns and complaints without fear of retaliation.

5. Roles, Responsibilities and Training

The Contractor shall implement the Labour Management Procedure and maintain labour-related records. The Design & Supervision Consultant shall monitor labour compliance and verify corrective actions, while WWF-Pakistan/PMU shall provide overall oversight, monitoring, and reporting. All workers and relevant project personnel shall receive induction and refresher training on workplace conduct, occupational health and safety, grievance procedures, and their respective roles and responsibilities.

ANNEX 11: ECOLOGICAL REPORT AND PLANTATION PLAN

Introduction

Abdul Khel cluster of District Dera Ismail Khan falls in an arid to semi-arid climatic zone where

naturally growing vegetation mainly consists of drought resistant shrubs, grasses, and thorny trees. Due to low rainfall, sandy soils, high temperatures, and seasonal hill torrents, only hardy indigenous species survive naturally in the area.

The ecological survey indicates that different self-grown plant species are present around nullahs, uncultivated lands, slopes, and hill torrent channels. These species play an important role in soil conservation, erosion control, slope stabilization, and ecological improvement.

The present report has been prepared for ecological plantation around the proposed structure area. Plantation is proposed within 200 ft upstream and 200 ft downstream of the structure in order to improve ecological conditions and protect the surrounding area from erosion and environmental degradation.

Existing Natural Vegetation

The following species are commonly found naturally growing in Abdul Khel and nearby areas **D.I. Khan:**

Sr. No	Local/Common Name	Botanical Name
	Kikar/Babul	Acacia nilotica
2	Vilayati Kikar	Prosopis juliflora
3	Jand/Jhand	Prosopis cineraria
4	Ber	Zizyphus mauritiana
5	Karir	Capparis decidua
6	Pilu	Salvadora oleoides
7	Farash	Tamarix aphylla
8	Dhaman Grass	Cenchrus ciliaris
9	Kana/Munj Grass	Saccharum munja

Suitability of Saccharum munja

Saccharum munja (Kana/Munj grass) is suitable for plantation in Abdul Khel area due to its drought resistance and strong root system. The species naturally grows in sandy soils, nullah banks, hill torrent areas, and dry riverbeds. It is highly effective for erosion control, slope stabilization, and protection of embankments and gabion structures.

Proposed Plantation Around Structure

Plantation is proposed within 200 ft upstream and 200 ft downstream of the structure for ecological improvement and soil stabilization. Native drought-resistant species are recommended to ensure survival under local climatic conditions.

Plantation Layout Recommendation

The proposed quantities are based on plantation along both sides of the structure including 200 ft upstream and 200 ft downstream areas. Higher quantities of Saccharum munja and Dhaman grass have been proposed for slope stabilization, erosion control, and protection of embankments and nullah banks. The proposed estimate is based on prevailing market rates in D.I. Khan including transportation and plantation charges.

Survival and Maintenance Plan

To ensure successful establishment and long-term survival of the plantation, a structured two-year maintenance plan is proposed.

- **Initial Watering**
    - Immediate watering after plantation to facilitate root establishment.
    - Supplemental watering during dry periods, particularly in the first growing season.
- **Replacement of Dead Plants**

- Replacement of Dead Plants
    - Mortality surveys at 3-month and 6-month intervals.
    - Replacement of dead or weak plants during the first two years.
- **Protection Against Grazing**
    - Temporary protection through thorn fencing, brushwood barriers, or stone alignments.
    - Community coordination to grazing and cutting.
- **Seasonal Pruning and Maintenance**
    - Annual pruning to remove damaged or dry branches.
    - Weeding around young plants during the first year.
- **Monitoring of Plant Survival**
    - Regular inspections to assess plant health and growth.
    - Maintenance of survival records for evaluation and corrective measures.
- **Water Harvesting and Moisture Conservation Measures**
    - Given the arid nature of the project area, the following measures are recommended:
    - Construction of small water retention pits or micro-catchments around individual plants.
    - Shallow contour trenches along slopes to reduce runoff velocity.
    - Mulching using locally available organic material to reduce evaporation.
    - Alignment of plantation rows to capture natural runoff where feasible.

Protection and Community Participation Measures

To ensure sustainability of the plantation:

- Community protection agreements shall be developed with local residents.
- Awareness sessions highlighting environmental benefits shall be conducted.
- Local community members may be engaged in plantation and maintenance activities to promote ownership.

Monitoring Indicators and Performance Evaluation

The effectiveness of the plantation shall be evaluated using the following indicators:

- Plant survival percentage (monitored bi-annually).
- Observed reduction in soil erosion and stabilized slopes.
- Improvement in vegetation cover and density.
- Photographic monitoring (before and after plantation) from fixed reference points.

Conclusion

The proposed ecological plantation will significantly improve environmental conditions around the structure area by enhancing soil stability, reducing erosion, and restoring native vegetation. The selected species are indigenous, drought-resistant, and well-suited to the climatic conditions of Abdul Khel, District Dera Ismail Khan. Special emphasis on *Saccharum munja* will ensure effective soil binding and long-term protection of nullah banks and structural works.