GOVERNMENT OF THE PUNJAB
PUNJAB CLEAN AIR PROGRAM | PCAP
PLANNING & DEVELOPMENT BOARD



Draft Environmental and Social Technical Manual

(ESTM)

Punjab Clean Air Program (PCAP)

Coordination and Monitoring Unit (CMU)

December 2025

LIST OF ACRONYMS

ADB	Asian Development Bank
AED	Anti Encroachment Drive
AQMS	Air Quality Monitoring System
CAP	Corrective Action Plan
CEMP	Construction Environmental Management Plan
CMU	Coordination and Monitoring Unit
COC	Code of Conduct
CPCB	Central Pollution Control Board
CSR	Corporate Social Responsibility
DB	Design-Build
DLI	Disbursement Link Indicators
DLR	Disbursement Link Results
EHS	Environment, Health, and Safety
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
EP&CCD	Environmental Protection & Climate Change Department
EPRP	Emergency Preparedness and Response Plan
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESTM	Environmental and Social Technical Manual
ESS	Environmental and Social Standards
ESSA	Environmental and Social Systems Assessment
FTL	Fuel Testing Laboratory
GBV	Gender-Based Violence
GIS	Geographic Information System
GoPb	Government of Punjab
GRM	Grievance Redress Mechanism
HSE	Health, Safety, and Environment
IEE	Initial Environmental Examination
IP	Implementing Partner

IPF	Investment Project Financing
LMP	Labor Management Procedures
MoE	Ministry of Environment
MSDS	Material Safety Data Sheet
NGO	Non-Governmental Organization
NOC	No Objection Certificate
OHS	Occupational Health and Safety
PAD	Project Appraisal Document
PD	Program Director
PCAP	Punjab Clean Air Program
PEQS	Punjab Environmental Quality Standards
PforR	Program for Results
PIU	Program Implementation Unit
PM	Program Manager
PMA	Punjab Mass Transit Authority
PPE	Personal Protective Equipment
PTC	Punjab Transport Company
PWDs	Persons with Disabilities
RCA	Root Cause Analysis
RP	Resettlement Plan
SEA/SH	Sexual Exploitation and Abuse / Sexual Harassment
SEP	Stakeholder Engagement Plan
SMP	Social Management Plan
SOP	Standard Operating Procedure
TOR	Terms of Reference
TMP	Traffic Management Plan
T&MD	Transport & Mass Transit Department
ToT	Training of Trainers
WB	World Bank

GLOSSARY OF TERMS

Air Quality Monitoring System	A network of instruments used to measure pollutants in the air, such as $PM_{2.5}$, PM_{10}, NOx, SO_2, CO, and ozone, for assessing air quality trends and compliance with standards.
Baseline Conditions	Existing environmental and social conditions of the Program area before the start of any activity, used as a reference for impact assessment.
Battery Thermal Runaway	A rapid, uncontrolled chemical reaction in lithium-ion batteries leading to overheating, fire, or explosion; requires special emergency handling.
Community Health and Safety	Measures taken to protect nearby residents, commuters, and the public from risks created by Program activities.
Construction Environmental & Social Management Plan	A contractor-prepared plan that outlines how environmental and social mitigation measures will be implemented during construction.
Corrective Action Plan	A documented plan outlining actions to address non-compliance or deficiencies identified during monitoring.
Environmental and Social Commitment Plan	A binding document outlining the environmental and social obligations agreed between the borrower and the World Bank.
Environmental and Social Impact Assessment	A detailed study evaluating potential environmental and social impacts of a Program and proposing mitigation measures.
Environmental and Social Management Plan	A site- or activity-specific document outlining environmental and social mitigation, monitoring, and institutional responsibilities.
Environmental and Social Screening	A process to identify the level of environmental and social risk associated with an activity and determine the required safeguards instruments.
Emergency Preparedness and Response	A system of procedures and resources designed to manage emergencies such as fires, chemical spills, and accidents.
Grievance Redress Mechanism	A formal system through which workers, community members, and stakeholders can raise complaints and receive timely resolutions.
Hazardous Waste	Waste poses substantial or potential threats to public health or the environment, including chemicals, batteries, oils, and contaminated materials.
Incident	An unplanned event that may cause harm to people, property, or the environment. Severe incidents include fatalities, major injuries, or serious environmental damage.

Labor Management Procedures	A framework governing labor conditions, worker rights, health and safety, and the workers' grievance mechanism.
Lithium-Ion Battery	A rechargeable battery type used in electric vehicles and equipment requires specialized handling, storage, and emergency response procedures.
Material Safety Data Sheet	A document providing information on chemical properties, hazards, storage, and emergency measures for safe handling of chemicals.
Mitigation Measures	Actions taken to prevent, reduce, or control adverse environmental and social impacts.
Monitoring	Regular observation and measurement of Program activities to ensure compliance with established environmental and social requirements.
Occupational Health and Safety	Measures to ensure the health, safety, and welfare of workers engaged in Program activities.
Program Implementation Unit	The implementing department or agency responsible for executing Program components and overseeing safeguards compliance.
Restricted Access Areas	Zones within Program sites, such as battery rooms or chemical storage areas, where only authorized personnel are allowed due to safety risks.
Root Cause Analysis	A structured approach used to determine underlying reasons for incidents or failures, guiding corrective actions.
Sexual Exploitation and Abuse / Sexual Harassment	Actions of sexual nature that exploit or abuse individuals; PCAP applies strict prevention and response protocols.
Sensitive Receptors	Locations such as schools, hospitals, old-age homes, or residential clusters that are vulnerable to dust, noise, or safety risks.
Social Management Plan	A document describing how social risks (labor, community safety, gender, vulnerable groups, etc.) will be mitigated.
Stakeholder Engagement	A continuous process of delivering information to and receiving feedback from communities, workers, agencies, and other interested parties.
Standard Operating Procedure	A step-by-step written guide describing how specific tasks must be carried out to ensure safety and compliance.
Traffic Management Plan	A plan that ensures safe movement of vehicles and pedestrians around construction or operational sites.

Vulnerable Groups	Individuals or groups who may be more adversely affected by Program activities, such as women, children, elderly persons, PWDs, informal workers, and low-income populations.

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EXECUTIVE SUMMARY

The Environmental and Social Technical Manual (ESTM) has been developed as a comprehensive operational guide to support the effective, safe, and compliant implementation of the Punjab Clean Air Program (PCAP). The manual provides a practical, step-by-step framework for engineers, safeguards specialists, contractors, sub-contractors, supervision consultants, Program Coordination and Monitoring Unit (CMU) and Program Implementation Unit (PIU) responsible for planning, executing, monitoring, and supervising activities under the Program. It ensures that all interventions whether related to e-bus depot development, charging infrastructure installation, laboratory strengthening, air quality monitoring, agricultural machinery deployment, or operational enhancements are aligned with national regulations and the World Bank' Program for Results (PforR) and Environmental and Social Framework (ESF).

PCAP aims to reduce air pollution, strengthen environmental governance, promote sustainable mobility, and improve public health in province Punjab. These objectives require a strong safeguards foundation to prevent and mitigate environmental and social risks while enhancing the long-term environmental performance and social acceptability of Program activities. The manual consolidates all required procedures, templates, tools, and protocols into one unified reference document.

The manual covers the full Program cycle, beginning with early-stage environmental and social screening to identify potential risks and determine the appropriate safeguards instruments. It details the development and implementation of Environmental and Social Impact Assessment (ESIA), Initial Environmental Examination (IEE), Environmental and Social Management Plans (ESMPs), Construction Environmental Management Plans (CEMPs), Social Management Plans (SMPs), Occupational Health and Safety (OHS) Plans, and Traffic Management Plans (TMPs). It also guides the integration of environmental design measures, resource efficiency practices, waste and hazardous material management, battery and e-waste handling protocols, and site-specific mitigation actions.

Social risk management receives equal emphasis, with dedicated sections on involuntary resettlement, livelihood disturbance, Anti Encroachment Drive (AED), labor and working conditions, gender inclusion, community health and safety, SEA/SH prevention, economic and livelihood considerations, and protection of vulnerable groups. The manual establishes a robust Grievance Redress Mechanism (GRM) for both workers and community members, ensuring transparency, fairness, and timely redressal of complaints.

Emergency preparedness and response procedures form a core part of the manual, given the program's interaction with lithium-ion batteries, high-voltage electrical systems, laboratory chemicals, construction activities, and agricultural machinery. Clear guidance is provided for responding to fires, explosions, chemical spills, machinery accidents, traffic incidents, and community-level emergencies. The manual also outlines incident reporting requirements, including the World Bank's 48-hour notification rule for serious or severe incidents.

A detailed Environmental and Social Monitoring & Reporting Framework ensures that safeguards performance is continuously assessed, documented, and improved. Monitoring responsibilities

are distributed across contractors, supervision consultants, PIUs, PCAP-CMU, and regulatory bodies. Regular reports daily, weekly, monthly, quarterly, and semi-annual ensure accountability and enable evidence-based decision-making.

To support smooth implementation, the manual includes a comprehensive set of Annexures containing templates, checklists, forms, SOPs, monitoring tools, and reporting formats. These annexures allow field teams and contractors to operate safeguards measures efficiently and consistently across all program sites.

Overall, this manual serves as a standardized, professional, and practical reference designed to strengthen safeguards compliance, improve safety culture, enhance environmental performance, and foster meaningful engagement with communities. Its use will help ensure that PCAP activities are executed responsibly, transparently, and in line with international best practices ultimately contributing to cleaner air, healthier communities, and a more sustainable urban development pathway in Punjab.

1. INTRODUCTION

1.1 Purpose of the Manual

The Environmental and Social Technical Manual (ESTM) has been developed to provide clear, practical, and implementation-focused guidance for all activities under the Punjab Clean Air Program (PCAP). Its purpose is to translate the environmental and social commitments of the program into step-by-step procedures that can be adopted by engineers, safeguards personnel, contractors, consultants, and field teams throughout the Program cycle. The manual ensures that all program interventions are implemented safely, responsibly, and in full compliance with the World Bank Environmental and Social Framework (ESF), the Environmental and Social Systems Assessment (ESSA) findings for the Program for Results (PforR) component, and the Government of Punjab's regulatory requirements.

1.2 Scope of the Manual

This manual applies to all PCAP interventions across the transport, environment, and agriculture sectors. For the transport sector, it covers the development and operation of e-bus depots, charging infrastructure, solarization systems, bus stops, road rehabilitation, and the transition to electric two- and three-wheelers, including the buy-back and scraping of obsolete vehicles. In the agriculture sector, it covers the safe and sustainable use of super-seeders, balers, and straw-management machinery, the establishment of digital rental platforms, farmer-level awareness campaigns, and safety protocols. For environmental governance, the manual guides the safe expansion of air quality monitoring systems, fuel testing laboratories, emissions inventory mechanisms, e-waste management, and community outreach. Collectively, the scope addresses planning, design, construction, operation, monitoring, and risk management.

1.3 Audience of the Manual

The manual is intended for engineers, safeguards specialists, contractors, supervision consultants, technical experts, depot managers, lab staff, community engagement teams, and field-level implementation personnel. It also serves as a reference document for institutional stakeholders including the Program Coordination and Monitoring Unit (PCAP-CMU), the Transport & Mass Transit Department (T&MD), Punjab Mass Transit Authority (PMA), Punjab Transport Company (PTC), the Environmental Protection & Climate Change Department (EP&CCD), the Agriculture Department, and the Industries Department. The guidance is written in a practical manner to support day-to-day implementation, supervision, monitoring, and compliance verification.

1.4 Overview of the Punjab Clean Air Program

The PCAP aims to reduce particulate matter (PM2.5) concentrations in major urban centers by strengthening air quality management and reducing emissions from key sectors. The Program adopts a multi-sectoral approach that includes (i) modernizing air quality monitoring systems; (ii) promoting cleaner and more efficient public transport, including the deployment of electric buses and related infrastructure; (iii) supporting the transition to electric two- and three-wheelers; (iv) introducing improved vehicle inspection systems; and (v) reducing agricultural emissions through

the promotion of machinery-based alternatives to crop residue burning. These interventions are designed to promote cleaner air, improve public health, and support sustainable urban and agricultural development across Punjab. It will achieve these objectives through three Result Areas (RAs), each targeting specific pollution sources:

- RA-1: AQM Governance and Awareness Raising
- RA-2:Transport Sector Abatement Measures
- RA-3:Agriculture Sector Abatement Measures

The PCAP is being executed in PforR operation and contains following 09 DLIs. **Table-1** below illustrate the details.

Table 1: Disbursement Link Indicators (DLIs)

Purpose of DLI	DLI	Agency Responsible	Financing (US$ mil)
Results Area 1: Air Quality Management Governance and Awareness Raising			
Strengthen air quality monitoring on a continuous basis	**DLI-1:** Additional regulatory grade monitors added to air quality monitoring network	EP&CCD	9
Strengthen air quality management governance	**DLI-2:** Integrated air pollutant/SLCP/GHG emissions inventory system is developed and routinely updated, used for assessment of Smog Action Plan and informs annual development plans	EP&CCD	6
Strengthen air quality monitoring infrastructure	**DLI-3:** Fuel quality testing laboratories with mobile and fixed facility operational	EP&CCD	3
Enhance public awareness campaign and citizen engagement	**DLI-4:** Interactive public information and awareness sessions held	EP&CCD	2
Results Area 2: Transport Sector Abatement Measures			
Expand public transport provisions with electric buses to encourage modal shifts away from private vehicles	**DLI-5:** Expand Cleaner Public Transport in Lahore Division (Electric Buses)	T&MD via PMA/PTC	140
Catalyze a transition towards cleaner 2/3Ws	**DLI-6:** Transition to Electric Two- and Three-Wheelers (new vehicles)	T&MD	50
Expand vehicle inspections and	**DLI-7**: Expand vehicle inspections	T&MD	10

strengthen nexus with vehicle licensing and retirement			
Scrap polluting vehicles with appropriate financial incentives	**DLI-8:** Buyback of aged polluting vehicles	T&MD	40
Results Area 3: Agriculture Sector Abatement Measures			
Improve mechanized rice straw management to reduce crop residue burning	**DLI-9:** Expanding mechanized rice straw management	AD	20

1.5 Environmental and Social Risk Management under PCAP

Given the nature and scale of PCAP interventions, the program carries substantial environmental and social risks that require structured management. Key risks include livelihood and physical dislocation, Anti Encroachment Drives (AEDs), number of affected persons more than 200, battery safety concerns, hazardous waste and e-waste generation, construction-related safety hazards, community safety risks along busy transport corridors, social exclusion risks, labor rights and occupational safety concerns, potential economic impacts on informal workers, and digital access barriers for rural communities. This manual provides procedures to identify, mitigate, monitor, and manage these risks through engineering controls, operational safeguards, and institutional mechanisms. By following this guidance, implementing agencies and contractors can ensure that activities are carried out safely and responsibly.

1.6 Use of the Manual in Program Implementation

This manual is designed for use at all stages of PCAP implementation. The manual also provides checklists, templates, and reporting formats to ensure consistency across sites and implementing entities.

During planning and design, it supports environmental and social screening risk categorization ***(Annexure-I and Annexure-II)***, checklist of deployment of super seeder ***(Annexure-III)***, templates for the preparation of Resettlement Plan (RPs) ***(Annexure-IV)***, ESIAs ***(Annexure-V)***, and ESMPs ***(Annexure-VI)***, contractor's ESMP ***(Annexure-VII)*** and development of OHS ***(Annexure-VIII)*** and Emergency Preparedness Response Plan (EPRP) ***(Annexure-IX)***.

During construction, it guides contractors on compliance with traffic management ***(Annexure-X)***, e-waste management ***(Annexure-XI)***, hazardous chemical spill SOP ***(Annexure-XII)***, worker's and community GRM ***(Annexure-XIII and Annexure-XIV)***, incident reporting ***(Annexure-XV)***, daily site inspection ***(Annexure-XVI)***, and stakeholder consultation ***(Annexure-XVII)***.

During operation and maintenance, it outlines monthly E&S performance ***(Annexure-XVIII)***, training ***(Annexure-XIX)***, corrective action plan ***(Annexure-XX)*** and contractor's mobilization checklist is attached as ***(Annexure-XXI)***.

1.7 Guiding Principles

The manual is built on principles that ensure responsible and equitable implementation of PCAP. These include preventing harm through early identification and mitigation of risks; using precautionary measures for high-risk activities such as battery storage, electrical systems, and chemical handling; ensuring inclusiveness so that women, informal workers, small farmers, and vulnerable groups benefit equally; maintaining transparency and meaningful stakeholder engagement; and establishing clear responsibilities within implementing agencies and among contractors. The manual also encourages continuous improvement by integrating lessons learned, monitoring results, and feedback from field teams and stakeholders.

2. REGULATORY AND SAFEGUARDS FRAMEWORK

2.1 Overview of the Environmental & Social Framework Applicable to PCAP

The PCAP operates under a unique hybrid structure, combining the World Bank's PforR financing and an Investment Project Financing (IPF) component. The IPF portion is governed by the World Bank's ESF, while the PforR portion follows the ESSA. Together, these frameworks establish the environmental and social obligations for planning, implementing, and monitoring all program activities. PCAP must therefore comply with both international and national requirements, ensuring that environmental and social risks are managed proactively across all components of transport, agriculture, environmental governance, infrastructure development, and institutional strengthening.

2.2 Environmental and Social Systems Assessment (ESSA) – PforR Component

Under the PforR component, environmental and social management is guided by the ESSA core principles rather than the full ESF. These principles require that the borrower's systems:

- Promote environmental and social sustainability
- Avoid or minimize impacts on natural habitats and cultural resources
- Protect public and worker safety
- Manage land acquisition and displacement
- Ensure the inclusion of vulnerable groups
- Avoid social conflict and adverse impacts on communities

The ESSA for PCAP rates the program's environmental and social risks as Substantial, requiring strengthened institutional coordination, capacity building, improved oversight, and enhanced mitigation measures. This manual supports the implementation of ESSA recommendations by translating them into practical steps for all implementing entities.

2.2.1 Core Principle 1 (Environmental & Social Management)

It examines whether PCAP procedures are backed by an adequate legal/regulatory framework in Punjab (for example via relevant environmental laws) that can guide environmental and social impact assessment. It also checks if PCAP includes early screening of potential impacts, assessment of alternatives, mitigation plans, clarity of institutional roles and responsibilities, and provisions for stakeholder consultation and grievance redress mechanisms. The aim is that PCAP's design promotes air-quality improvements (a positive environmental and social benefit), while minimizing unintended negative impacts.

2.2.2 Core Principle 2 (Natural Habitats & Cultural Resources)

While PCAP's main activities (air-quality management, transport, agriculture interventions) are not expected to significantly convert or degrade critical natural habitats or cultural heritage sites, the PCAP still requires systems to screen for such risks and ensure any interventions avoid or mitigate them where relevant.

2.2.3 Core Principle 3 (Public and Worker Safety)

PCAP involves construction (e-bus depots, infrastructure), operation of new transport modes, fuel/laboratory infrastructure, etc. The ESSA examines whether relevant safety standards (building codes, hazardous materials handling, occupational safety, etc.) are applied.

2.2.4 Core Principle 4 (Land Acquisition / Loss of Access)

Some PCAP activities may require land (e.g., for bus depots, infrastructure). This principle assesses whether acquisition or access-restriction is needed, and whether procedures exist to avoid or minimize displacement or livelihood losses. Nevertheless, where any land is needed (e.g. e-bus facilities), relevant safeguards (screening, compensation, resettlement plans) must be applied as per PforR guidelines.

2.2.5 Core Principle 5 (Indigenous Peoples & Vulnerable Groups)

The ESSA notes that within the PCAP's coverage area (Punjab), there are no recognized Indigenous Peoples (in the sense used in the policy). But PCAP still needs to ensure equitable access for vulnerable or disadvantaged groups (e.g., persons with disabilities, women, low-income communities, small farmers). The ESSA highlights some existing gaps: implementing agencies often lack staff and capacity dedicated to reaching out to vulnerable groups; benefits (e.g., subsidized super-seeders, access to public transport) may not always reach women, the disabled, or other disadvantaged persons effectively. As a result, the ESSA recommends preparing a Disability Inclusion Plan, a Gender Action Plan, and ensuring communications / outreach / grievance-redress mechanisms are accessible to all, including vulnerable groups.

2.2.6 Core Principle 6 (Social Conflict)

Though PCAP's context (Punjab, not a conflict zone) makes major conflict risks less likely, the ESSA still requires assessment to ensure that program design does not exacerbate social tensions for instance by unfair distribution of benefits, exclusion of certain groups, inequitable access, or grievances. The ESSA of PCAP includes this as part of its social management review.

2.3 World Bank Environmental and Social Framework (ESF)

Under the IPF component, five Environmental and Social Standards (ESSs) apply to PCAP. These standards outline the responsibilities of the borrower and implementing agencies in managing risks, engaging stakeholders, ensuring worker safety, and protecting communities and the environment.

2.3.1 ESS1 Assessment and Management of Environmental and Social Risks and Impacts

ESS1 requires the identification, assessment, and management of risks associated with activities such as the construction of e-bus depots, installation of charging stations, establishment of air quality monitoring systems, upgrading of laboratories, and deployment of agricultural machinery. It mandates the preparation and implementation of RPs, ESIAs, ESMPs, and activity-specific mitigation measures to ensure that environmental protection, occupational safety, and social considerations are integrated into Program design and execution.

2.3.2 ESS2 Labor and Working Conditions

ESS2 focuses on ensuring safe, fair, and non-discriminatory working conditions for all project workers. It prohibits child labor and forced labor, requires the enforcement of minimum wage laws, and mandates the establishment of a workers' grievance mechanism. Under PCAP, this includes safeguards for construction workers, depot and charging station staff, laboratory technicians, machinery operators, drivers, and contractual staff engaged through contractors or supervision consultants.

2.3.3 ESS3 Resource Efficiency and Pollution Prevention and Management

ESS3 addresses pollution management and efficient use of natural resources. For PCAP, this includes controlling air emissions, managing construction waste, ensuring safe handling of chemicals in testing laboratories, and developing protocols for the management of lithium batteries, hazardous waste, and electronic waste. The ESS3 framework is especially critical for managing end-of-life batteries, solar panels, charging equipment, and digital monitoring devices.

2.3.4 ESS4 Community Health and Safety

ESS4 requires measures to safeguard the health and safety of communities affected by Program activities. Risks include traffic disturbances during the construction of depots and bus stops, public exposure to electrical hazards at charging stations, fire risks associated with electric buses and battery storage, and safety concerns related to roadshow vehicles and awareness activities. ESS4 mandates emergency preparedness, traffic management plans, public safety measures, and communication protocols to minimize risks to surrounding communities.

2.3.5 ESS10 Stakeholder Engagement and Information Disclosure

ESS10 ensures that all relevant stakeholders including communities, transport users, farmers, local businesses, and vulnerable groups are informed and consulted throughout the Program cycle. The Stakeholder Engagement Plan (SEP) outlines structured processes for information dissemination, grievance redress, community outreach, and engagement with disadvantaged groups such as women, informal transport workers, and smallholder farmers.

2.4 National Environmental Regulatory Framework

PCAP must operate in compliance with the environmental legislation of Punjab and Pakistan. Key laws and regulations include:

2.4.1 Punjab Environmental Protection Act 2012 (Amended 2017)

The Act mandates environmental approvals (IEE/EIA) for Programs that may cause adverse environmental impacts. Construction of e-bus depots, installation of fuel testing laboratories, and waste management facilities must undergo environmental screening and, where required, obtain a No Objection Certificate (NOC) from the Environmental Protection & Climate Change Department.

2.4.2 Punjab Environmental Quality Standards (PEQS)

PEQS prescribe limits for air emissions, effluent discharge, noise levels, and drinking water quality. These standards apply to depot operations, wastewater discharge from bus washing activities, noise from machinery, and emissions from agricultural equipment.

2.4.3 Punjab Hazardous Substances Rules 2020

These rules govern the storage, handling, transport, and disposal of hazardous substances. They apply directly to battery management, fuel testing chemicals, e-waste, and any hazardous materials stored or used under PCAP.

2.4.4 Environmental Impact Assessment Regulations

These regulations provide procedures for screening, scoping, public consultation, and approval of EIA and IEE reports. All infrastructure activities under PCAP must follow these regulations as applicable.

2.5 National Social and Labor Regulatory Framework

2.5.1 Punjab Occupational Safety and Health Act 2019

The Act requires safe working conditions, risk assessments, emergency preparedness, and use of personal protective equipment. It applies to workers at depots, charging stations, construction sites, laboratories, and agricultural machinery workshops.

2.5.2 Punjab Labor Policy 2018 and Minimum Wages Legislation

These establish minimum labor standards, wage protection, equal opportunity, and non-discrimination, which are mandatory for all contractors and subcontractors.

2.5.3 Punjab Restriction of Employment of Children Act 2016

Prohibits child labor in hazardous occupations, including construction, electrical work, chemical handling, and heavy machinery operations all directly relevant to PCAP.

2.5.4 Land Acquisition Act 1894 and Punjab Land Acquisition Rules 1983

Applicable where land is needed for depots, charging facilities, or other infrastructure. PCAP processes must ensure avoidance of involuntary displacement and compliance with due process.

2.5.5 Punjab Protection of Women Against Violence Act 2016 and Punjab Women Development Policy 2018

These frameworks mandate gender-sensitive planning, equal participation, and measures to protect women from harassment relevant for women using public transport, women workers, and participants in community outreach activities.

2.5.6 Punjab Empowerment of Persons with Disabilities Act 2022

Ensure that new infrastructure (bus stops, depots, pedestrian routes) is accessible and disability inclusive.

2.6 Alignment of WB Standards and Punjab Laws

PCAP integrates both World Bank standards and Punjab laws through a harmonized approach that:

- Applies ESF requirements to all IPF activities
- Uses ESSA core principles across PforR activities
- Ensures environmental approvals are obtained under PEPA

- Follows national labor laws in line with ESS2
- Ensures community safety in accordance with ESS4 and provincial safety laws
- Implements disclosure and consultation as required under ESS10 and the SEP

This manual operationalizes these requirements through procedures, checklists, and templates that guide implementing agencies and contractors in achieving full compliance.

3. INSTITUTIONAL ARRANGEMENTS AND RESPONSIBILITIES

3.1 Overview of Institutional Structure

The PCAP involves multiple government departments and specialized agencies working collectively to implement program activities and ensure compliance with environmental and social requirements. The institutional structure is designed to enable coordinated planning, effective implementation, and continuous monitoring across sectors including transport, agriculture, environmental governance, and industry. This chapter outlines the specific roles and responsibilities of each institution involved in the program, enabling clear accountability and smooth operational coordination throughout the Program cycle.

3.2 Program Coordination and Monitoring Unit (PCAP-CMU), Planning & Development Board

The Program Coordination and Monitoring Unit (PCAP-CMU), established within the Planning and Development Board, serves as the overall coordinating body for the program. It is responsible for central oversight, compliance monitoring, and reporting to the World Bank. PCAP-CMU leads the preparation, approval, and disclosure of environmental and social documents under the IPF component, including RPs, ESIAs, ESMPs, LMP, SEP, institutional assessments, and risk management plans. It ensures that all implementing agencies follow agreed standards and provides technical guidance to strengthen safeguards capacity. The CMU also consolidates monitoring reports, incident notifications, and progress updates received from line departments, and ensures compliance with ESCP commitments and World Bank requirements.

3.3 Program Implementation Unit (PIU) – Transport & Mass Transit Department (T&MD)

The Transport & Mass Transit Department (T&MD) hosts the primary Program Implementation Unit (PIU), which is responsible for executing transport-sector activities under PCAP. This includes development of e-bus depots, installation of charging infrastructure, deployment of mass transit improvements, support for electric two- and three-wheeler adoption, and vehicle inspection system enhancements. The PIU ensures that all transport infrastructure and related interventions adhere to approved ESMPs, OHS plans, traffic safety guidelines, community engagement requirements, and environmental permits. It supervises contractor performance, reviews method statements, facilitates public consultations, and coordinates with district administration where necessary. The PIU also implements the Program-level Grievance Redress Mechanism (GRM) for transport activities and is responsible for on-site monitoring, documentation, and timely submission of monthly and quarterly safeguards reports to PCAP-CMU.

3.4 Punjab Mass Transit Authority (PMA)

The Punjab Mass Transit Authority plays a central role in operationalizing e-bus systems and ensuring environmental and social compliance during depot operations, fleet management, battery storage, charging operations, and bus washing protocols. PMA is responsible for developing and implementing depot-level OHS procedures, fire safety plans, emergency response systems, and workforce training for safe operation of electric vehicles and related infrastructure. It also ensures that depots meet accessibility standards for women, persons with disabilities, and vulnerable transport users. PMA maintains operational records, safety incident

logs, battery handling documentation, and ensures that waste, effluent, and chemical substances are managed in accordance with PEQS and ESMP requirements.

3.5 Punjab Transport Company (PTC)

PTC provides technical support for transport-related activities, including fleet assessments, driver training, compliance checks, and coordination with private bus operators. It assists in monitoring the performance of e-bus operations, ensures enforcement of safety standards at bus stops and terminals, and coordinates with district transport authorities on traffic management arrangements during construction and operation. PTC may also support public awareness campaigns on pollution reduction, traffic safety, and environmental benefits associated with clean transport systems.

3.6 Environmental Protection & Climate Change Department (EP&CCD)

The Environmental Protection & Climate Change Department is responsible for regulatory oversight of environmental compliance within PCAP. EP&CCD issues environmental approvals (IEE/EIA) for infrastructure activities such as e-bus depots and waste management facilities, monitors adherence to environmental quality standards, and conducts periodic inspections. It plays a critical role in supervising hazardous waste storage, wastewater discharge, and emissions–related activities, including those from fuel testing laboratories and air quality monitoring stations. EP&CCD's collaboration ensures alignment between Program-level mitigation measures and provincial environmental policies, including the Smog Action Plan and Clean Air Policy.

3.7 Agriculture Department

The Agriculture Department oversees the implementation of program activities related to crop residue management and machinery-based alternatives to burning. It ensures the safe deployment and operation of super-seeders, balers, and associated machinery through farmer outreach, training programs, demonstration sessions, and field monitoring. The department also ensures workers' safety while operating agricultural equipment, facilitates digital rental platform adoption, and monitors emissions reduction outcomes from residue management interventions. It is also responsible for implementing awareness campaigns and supporting women farmers and smallholders who may face barriers in accessing machinery or program benefits.

3.8 Industries, Commerce & Investment Department

The Industries Department supports PCAP by facilitating industrial data collection, organizing stakeholder consultations with small and medium enterprises, and contributing to assessments regarding boilers, kilns, furnaces, and industrial emissions. It oversees the implementation of industrial clean technology assessments, promotes adoption of pollution control technologies, and ensures coordination with EP&CCD on emissions inventories and compliance with environmental regulations. The department also collaborates with PCAP-CMU on designing strategies for cleaner production and supporting industries in adopting environmentally responsible practices.

3.9 Contractors and Supervision Consultants

Contractors are responsible for implementing construction-related environmental and social mitigation measures as outlined in the ESMP, CEMP, OHS Plan, and Traffic Management Plan. They must appoint qualified EHS officers, conduct daily toolbox talks, maintain hazard registers, and ensure adherence to labor standards, safe work practices, and proper waste management protocols. Supervision consultants play a parallel oversight role, verifying contractor compliance, conducting regular inspections, preparing site monitoring reports, and recommending corrective actions where needed. They also support the PIU in incident investigation, documentation, and execution of remedial measures.

3.10 Community Stakeholders and Local Administration

District administrations and local authorities play an important facilitation role, particularly where construction occurs in public spaces or transport corridors. They help coordinate traffic diversions, enforce safety measures around construction sites, and support stakeholder engagement activities. Community members, transport users, farmers, private operators, and local businesses are key stakeholders who provide feedback through consultations and the GRM. The program ensures their concerns are documented, addressed, and integrated into design and implementation through ongoing engagement led by the PIU and CMU.

3.11 Coordination and Reporting Mechanisms

A structured coordination and reporting system ensures alignment across all implementing entities. PIUs submit monthly and quarterly environmental and social performance reports to PCAP-CMU, which consolidates them into program-wide progress reports for the World Bank. Incident and accident reporting procedures, including 48-hour notifications, are followed in line with ESCP requirements. Coordination meetings between CMU, PIUs, EP&CCD, PMA, and other stakeholders are conducted regularly to review safeguards performance, address implementation challenges, and agree on corrective actions. This collaborative approach ensures continuous improvement and smooth implementation of all program components.

4. ENVIRONMENTAL MANAGEMENT PROCEDURES

4.1 Introduction to Environmental Management Under PCAP

Environmental management is a core requirement of the PCAP due to the diverse nature of program activities, ranging from construction of e-bus depots and charging stations to operation of fuel testing laboratories, deployment of agricultural machinery, and installation of digital monitoring systems. Each activity carries potential environmental risks that must be managed proactively to prevent pollution, protect natural resources, and ensure safe working and operating environments. This chapter provides a structured set of environmental management procedures that guide implementing agencies, engineers, contractors, and supervision consultants in identifying, mitigating, and monitoring environmental risks throughout the Program cycle.

4.2 Environmental and Social Screening Process

Screening is the first step in environmental management and helps determine the level of assessment and mitigation required for each activity. Under PCAP, all infrastructure or field-based activities must undergo screening based on an approved format that considers the location, nature of activities, scale of construction, potential community exposure, and waste or emissions generated. The screening process ensures early identification of sensitive receptors, hazardous operations, and regulatory requirements such as the need for IEE/EIA approvals. Screening outcomes classify activities into categories requiring (i) full ESIA, (ii) stand-alone ESMP, or (iii) simple mitigation checklists for low-risk interventions. Screening findings guide the preparation of safeguard instruments and help allocate responsibilities among implementing entities.

4.3 Preparation of Environmental and Social Instruments

Based on the screening outcome, appropriate environmental and social instruments must be prepared. For higher-risk infrastructure such as e-bus depots, charging complexes, and waste handling facilities, a detailed ESIA is required, followed by a site-specific ESMP. For moderate-risk activities such as bus stop improvements, small repairs, or installation of solar or monitoring equipment, a simplified ESMP or checklist is sufficient. All instruments must outline risks, mitigation measures, monitoring indicators, roles and responsibilities, capacity needs, and cost requirements. The CMU reviews and send it to the bank for the clearance these documents before implementation begins.

4.4 Environmental Management During Design

The design stage offers critical opportunities to integrate environmental considerations into Program infrastructure and systems. For e-bus depots and charging stations, design must account for safe battery storage areas, fire-resistant materials, proper ventilation, emergency response access, water-efficient washing systems, and drainage systems capable of managing sludge and wastewater. Solar system designs must ensure structural stability, electrical safety, and safe battery disposal arrangements. For laboratories, designs must include hazardous waste storage rooms, spill containment, fume hoods, safe chemical storage, and ventilation systems. Incorporating these elements at the design stage significantly reduces environmental risks during construction and operation.

4.5 Construction Environmental Management Requirements

Construction activities under PCAP such as depot construction, roadworks, installation of charging systems, and building rehabilitation must comply with the Environmental and Social Management Plans and follow dedicated Construction Environmental Management Plans (CEMPs). Contractors are required to control dust through water sprinkling, manage noise by restricting work hours in populated areas, maintain machinery to reduce emissions, and implement traffic diversion plans to protect road users. Construction waste must be segregated and disposed of at designated sites, while hazardous materials must be stored in secure containment areas. Adequate sanitation, drinking water, and rest areas must be provided for workers. Supervision consultants always monitor compliance and document corrective actions where required.

4.6 Resource Efficiency and Water Management

Resource efficiency is essential to minimize environmental impacts and operational costs. E-bus depots must adopt water-efficient bus washing systems such as pressure nozzles or recycling units to reduce water consumption. Designs should encourage rainwater harvesting and minimize reliance on groundwater. In agriculture interventions, fuel-efficient machinery operation and optimal tractor usage help reduce emissions and fuel consumption. Laboratories must monitor water usage and ensure that equipment and chemical processes are designed for efficient use of resources. All implementing agencies should track resource consumption indicators as part of their environmental monitoring responsibilities.

4.7 Wastewater and Sludge Management

Wastewater generated from bus washing operations, floor cleaning, vehicle maintenance, and laboratory processes must be managed in accordance with Punjab Environmental Quality Standards (PEQS). Depots must install oil-water separators, sedimentation chambers, and sludge traps to prevent pollutants from entering municipal drains or natural water bodies. Sludge collected from washing platforms must be dried and disposed of at approved municipal or industrial waste sites. Laboratories must ensure that chemical wastewater is neutralized, treated, or stored securely for collection by licensed waste handlers. No untreated wastewater may be discharged into drains, open land, or watercourses.

4.8 Hazardous Waste and Chemical Management

PCAP activities generate various forms of hazardous waste, including lithium batteries, electronic waste, transformer fluids, fuel testing chemicals, laboratory reagents, oils, greases, and contaminated rags. All hazardous waste must be stored in labelled, leak-proof containers placed within impermeable, bunded areas. Battery storage rooms must be ventilated, heat-resistant, and equipped with Class D fire extinguishers. Laboratories must prepare chemical handling SOPs and maintain inventory registers, Material Safety Data Sheets (MSDS), and spill response kits. EP&CCD regulations under the hazardous substance rules must be strictly followed. Safe disposal must be ensured through licensed hazardous waste management service providers, with records maintained for audit and compliance.

4.9 E-Waste and Battery Waste Management

A significant portion of PCAP activities involve digital and electrical equipment, including batteries, sensors, control units, solar components, and air quality monitoring devices. End-of-life batteries and electronic components contain toxic materials that must not enter the informal recycling chain. PCAP requires the establishment of a structured battery and e-waste management system, including segregation, safe storage, controlled transportation, and disposal at licensed recycling facilities. Implementing agencies must maintain inventories of generated e-waste and batteries, track their movement, and ensure compliance with safety and fire prevention procedures, especially for lithium-ion units prone to thermal runaway.

4.10 Air Emission and Dust Control

Construction sites, machinery operations, and agricultural machinery deployment can generate dust and particulates. Contractors must apply dust suppression through water spraying, covering of loose materials during transport, and limiting excavation during windy conditions. Machinery must be well-maintained to minimize exhaust emissions. Agricultural machinery such as super-seeders must be used with proper tuning to reduce emissions. Laboratories and testing facilities must follow safety protocols to prevent release of fumes, vapors, or chemicals into the air. Air emissions must always remain within PEQS limits.

4.11 Noise and Vibration Management

Construction machinery, loading and unloading activities, and laboratory equipment may generate noise that can disturb nearby residents and sensitive receptors. Noise levels must be regularly monitored, and equipment must be operated on within permissible hours. Noise barriers or temporary acoustic screens must be installed at sensitive locations such as schools, hospitals, or residential clusters. Vibrations from heavy machinery should be minimized, and equipment should only be used on stable ground away from sensitive infrastructure.

4.12 Soil Protection and Solid Waste Management

To prevent soil contamination, construction sites must implement measures such as drip trays under machinery, impermeable flooring in storage areas, and controlled storage of construction materials. Solid waste generated from construction, depot operations, laboratory work, and awareness campaigns must be segregated at source into recyclable, organic, inorganic, and hazardous waste. Contractors must ensure timely transportation of waste to municipal or approved disposal sites. No waste disposal is allowed through open burning or dumping on open land.

4.13 Emergency Preparedness and Response

Given the involvement of batteries, electrical systems, heavy machinery, and chemicals, emergency preparedness is critical. Implementing agencies and contractors must prepare Emergency Response Plans that outline procedures for fire management, chemical spills, electrical shocks, battery fires, and worker injuries. Firefighting equipment must be readily available and regularly inspected. Staff must be trained in emergency procedures, evacuation routes, and first aid. Coordination with local rescue services and fire departments is essential for depot-level operations.

4.14 Environmental Monitoring and Record-Keeping

Environmental monitoring forms the backbone of compliance under PCAP. Implementing agencies must conduct regular inspections covering dust suppression, waste handling, wastewater treatment, hazardous material storage, and OHS compliance. Monitoring data must be recorded systematically and incorporated into monthly and quarterly reports submitted to PCAP-CMU. Environmental records including checklists, logs, test results, waste disposal certificates, training records, and incident reports must be maintained at Program sites for review by regulators, supervision consultants, and the World Bank.

5. SOCIAL MANAGEMENT PROCEDURES

5.1 Introduction to Social Risk Management Under PCAP

Social risk management is a central component of the PCAP because many Program activities directly interact with communities, transport users, informal workers, laborers, farmers, Non-Governmental Organizations (NGOs) and other vulnerable groups. The program aims to improve public health and urban mobility, yet its interventions such as construction of transport infrastructure, deployment of agricultural machinery, enhancement of vehicle inspection systems, and operational activities at depots may create temporary or long-term social risks. This chapter establishes practical procedures for identifying, mitigating, and monitoring these risks so that PCAP is implemented in a socially responsible, inclusive, equitable, and conflict-free manner. The procedures align with the World Bank's Environmental and Social Framework, national legislation, and the program's Stakeholder Engagement Plan (SEP).

5.2 Social Screening and Risk Identification

All PCAP activities must undergo a structured social screening process to identify potential risks before implementation begins. The screening assesses the presence of vulnerable populations, the livelihood or economic disruption, impacts on informal settlements, dislocation impacts (if any) gender-related risks, labor-related risks, and risks to community health and safety. Activities such as depot construction will be screen out critically (as per the given criteria in ESSA i.e the site(s) will be primarily checked either an AED was carried out after 4th December 2024, and second the land ownership (Public/Private) status and number of Affected Persons (APs) of land less than 200 or not), roadside improvement works, machinery deployment, or vehicle scrappage may involve interactions with diverse groups including transport workers, roadside vendors, farmers, commuters, and women users requiring a careful analysis of the Program's social footprint. Screening results determine whether a simple social checklist, a stand-alone Social Management Plan (SMP), or a more detailed assessment is needed. Early identification ensures that risks are addressed proactively and that Program designs incorporate culturally appropriate mitigation measures.

5.3 Labor Management and Working Conditions

PCAP employs multiple categories of workers, including construction labor, depot and charging station staff, laboratory technicians, drivers, mechanics, and contractual workers engaged by contractors. To protect these workers, the program follows the Labor Management Procedures and national labor laws. Workers must receive fair wages, written employment contracts, safe working conditions, and access to grievance redress mechanisms. No child labor or forced labor is permitted. Contractors are required to comply with occupational health and safety standards by providing protective equipment, training on safe work methods, emergency preparedness systems, and adequate onsite facilities such as drinking water, sanitation, and resting areas. Regular monitoring ensures that wage payments, overtime practices, behavior of supervisors, and treatment of migrant workers meet acceptable standards. PIUs and supervision consultants must routinely verify labor conditions at all sites.

5.4 Community Health and Safety

Many PCAP activities occur in densely populated or road-side environments, which increases the risk of community-level disturbances. Construction of e-bus depots, roadworks, excavation activities, and the installation of charging infrastructure may expose pedestrians, commuters, and nearby residents to hazards such as traffic congestion, dust, noise, open trenches, electrical risks, and construction machinery. To address these risks, contractors must implement Traffic Management Plans, secure work areas using barricades and signage, provide safe pedestrian detours, regulate vehicle movement, and communicate work schedules to communities. During depot operations, special attention is required to manage high voltage charging infrastructure, battery storage, and fire risks. Public awareness boards, emergency contact numbers, and safety instructions must be displayed at all major sites. The safety of women, elderly persons, and persons with disabilities must be integrated into all community safety measures.

5.5 Gender Considerations and Inclusion of Vulnerable Groups

PCAP recognizes that women, persons with disabilities, low-income commuters, informal workers, and smallholder farmers often face barriers in accessing Program benefits or navigating Program impacts. Women may experience harassment at transport terminals or may have difficulty accessing new services if infrastructure is not adequately designed. To promote gender-sensitive outcomes, the program requires: (i) safe and well-lit bus stops and depots, (ii) separate waiting spaces where possible, (iii) CCTV surveillance, (iv) trained staff capable of addressing harassment complaints, and (v) targeted consultations with women and vulnerable groups. For agriculture interventions, special measures ensure that women farmers, tenant farmers, and laborers are not excluded from the benefits of machinery-sharing platforms or awareness campaigns. The program also emphasizes disability-inclusive design, mandating accessible pathways, ramps, tactile markings, and service counters that accommodate persons with limited mobility or visual impairments.

5.6 Economic and Livelihood Considerations

Certain PCAP activities such as the introduction of electric vehicles, buyback of polluting vehicles, and upgrades to inspection systems may affect small-scale transport workers, motorcycle mechanics, roadside vendors, rickshaw operators, and informal laborers. The program must ensure that interventions do not inadvertently create economic displacement or reduce livelihoods. Screening must identify the presence of informal workers along Program sites, and mitigation measures must be integrated into site planning and community engagement. Where small businesses or temporary vendors are affected by construction or depot development, relocation assistance, advance notice, or temporary adjustments must be provided. For transport-sector reforms such as scrappage schemes, communication strategies and transitional support for affected workers must be prioritized.

5.7 Social Management During Construction

During construction, contractors must adhere strictly to Social Management Plans and follow safe work practices that do not inconvenience neighboring communities. Work timings should minimize disturbances; excavation zones must be secured; nighttime work must include lighting and noise controls; and coordination with local authorities must be maintained. Workers must behave

respectfully toward communities and avoid misconduct, particularly around sensitive populations such as schools, hospitals, and residential clusters. Contractors must manage interactions between workers and community members carefully and establish protocols to address complaints or incidents quickly. Community liaison personnel or focal points should be designated on large worksites to maintain daily communication with residents and businesses affected by construction activities.

5.8 Protection Against Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH)

PCAP's Gender Action and SEA/SH mitigation measures apply across all program interventions. All contractors and agencies must enforce Codes of Conduct for workers, deliver mandatory training on sexual harassment prevention, and establish confidential and accessible channels for reporting SEA/SH incidents. Construction camps, depots, charging stations, and public transport facilities must be designed and managed to minimize risks of harassment, particularly for women and girls. Lighting, surveillance, posting of safety instructions, and presence of trained staff contribute to a safer environment. All incidents must be managed following survivor-centered principles, ensuring confidentiality, referral to appropriate services, and timely action.

5.9 Stakeholder Engagement and Communication

Effective stakeholder engagement is essential for maintaining trust, minimizing grievances, and ensuring community support for PCAP interventions. Engagement activities should be inclusive, transparent, and ongoing throughout the Program cycle. Implementing agencies must ensure that communities, transport workers, farmers, women's groups, industrial stakeholders, and other interested parties are informed about construction schedules, changes in traffic flow, availability of new services, and potential environmental or social risks. The Stakeholder Engagement Plan guides the frequency, formats, and methods for engagement, including public consultations, small group meetings, awareness sessions, distribution of information materials, and use of digital outreach tools. Feedback from stakeholders must be recorded and used to adjust Program activities where feasible.

5.10 Grievance Redress Mechanism

PCAP has established a comprehensive, multi-tiered Grievance Redress Mechanism to ensure that all stakeholders including community members, commuters, workers, farmers, and vulnerable groups can report concerns in a timely and accessible manner. The GRM includes channels such as dedicated phone numbers, email addresses, complaint boxes, WhatsApp lines, and in-person submission points at PIU offices or construction sites. Complaints must be registered, acknowledged, assessed, and resolved within defined timelines. Workers must have a separate, confidential grievance mechanism to raise labor-related concerns. SEA/SH grievances must be handled through a survivor-centered protocol with strict confidentiality. All grievances and resolutions must be documented and included in routine monitoring reports submitted to PCAP-CMU.

5.11 Social Monitoring and Reporting

Implementing agencies and supervision consultants must conduct regular monitoring to assess compliance with social management requirements. Monitoring activities include checking labor conditions, recording community interactions, verifying implementation of safety measures,

reviewing GRM records, and ensuring adherence to SEA/SH mitigation plans. Monitoring reports are prepared monthly and quarterly, summarizing emerging risks, grievances, incidents, and actions taken. These reports are submitted to PCAP-CMU, which compiles consolidated program-level reports for the World Bank. Monitoring results guides corrective actions, capacity-building needs, and improvements in implementation methodologies.

5.12 Applicable Environmental & Social Safeguard Instruments for PCAP DLIs as per ESSA

The PCAP applies the World Bank Program-for-Results framework and has been assessed through the ESSA to ensure that activities under each Disbursement Linked Indicator (DLI) integrate environmental, occupational, community safety, waste, resettlement safeguards. Where physical interventions or installation works are involved, RPs (if applicable), ESAI/IEE, site-specific ESMPs and operational SOPs are required to mitigate risks and demonstrate compliance through implementation evidence and oversight accountability. The following **Table-2** illustrates this with responsibilities.

Table 2 E&S Instruments as per ESSA

Result Area (RA)	DLI	Implementing Agency	Required E&S Safeguard Documents / Instruments	Responsibility
RA-1 **Air Quality Management Governance and Awareness Raising**	**DLI 1** **Air Quality Monitors**	EP&CCD	• ESMP for monitor installation & O&M (covers e-waste, batteries, worker safety, safe siting) • O&M Manual • E-waste & Battery Disposal SOP • GRM/SEP evidence	EP&CCD PCAP-CMU
	DLI 2 **Emission Inventory System**	EP&CCD	• No physical works (ESMP not required) • Data Governance & Quality Protocol • Consultation record • Capacity/Training Plan	EP&CCD PCAP-CMU
	DLI 3 **Fuel Quality Labs (Fixed & Mobile)**	EP&CCD	• Facility-level ESMP(s) for lab retrofit or installation (chemical handling, hazardous waste, OHS, fire safety, mobile lab transport safety) • Chemical & Hazardous Waste SOP • OHS Plan • Permits/EHS compliance record	EP&CCD PCAP-CMU

Result Area (RA)	DLI	Implementing Agency	Required E&S Safeguard Documents / Instruments	Responsibility
	DLI 4 **Public Awareness Sessions**	EP&CCD	• No civil works (ESMP not required) • SEP/Campaign Plan • Disability & Gender Inclusion Plan • GRM for campaign	EP&CCD PCAP-CMU
RA-2 **Transport Sector Abatement Measures**	**DLI 5** **Electric Buses Expansion**	T&MD via PMA/PTC	• Site/Depot ESMP(s) for each depot or programmatic ESIA/ESMP with site addenda (construction impacts, traffic, community safety, battery fire risk, OHS, waste & battery management) • Resettlement Plan (if required) • TMP/CHS Plan • Emergency Response Plan • Battery Disposal & Recycling SOP	T&MD PIU
	DLI 6 **E 2/3-Wheelers Transition**	T&MD + Industry	• Scheme level, no construction (ESMP not required) • EHS Vehicle/Charging Specs • Battery End-of-Life SOP • Inclusion/SEP record • Technician Safety Training Log	T&MD PIU/Industry
	DLI 7 **Vehicle Inspection Program**	T&MD	• Inspection centers exist, no new works expected (ESMP not required) • Inspection SOP • OHS Compliance Checklist • Public SEP Record • GRM log	T&MD PIU
	DLI 8 **Aged Vehicle Buyback/Scrappage**	T&MD + EP&CCD	• No construction but involves dismantling facilities/vendors. • No traditional ESMP required, but fix this instead;	T&MD PIU

Result Area (RA)	DLI	Implementing Agency	Required E&S Safeguard Documents / Instruments	Responsibility
			• End-of-Life Vehicle Environmental & Safety Management Plan (ELV-ESMP) (focused ESMP covering fluid drainage, parts dismantling, battery handling, OHS and waste transfer compliance) • Livelihood assistance record (if triggered) • GRM appeals log	
RA-3 **Agriculture Sector Abatement Measures**	**DLI 9** **Mechanized Rice-Straw Management**	Agriculture Department Punjab	• Screening checklist • Machinery/Facility ESMP(s) if machines stored, maintained, or community service facilities established (dust, fuel storage, OHS, community safety, noise, soil protection) • OHS for machinery • Inclusion/Stakeholder engagement record	Agriculture Dept/CMU

6. INCIDENT AND ACCIDENT MANAGEMENT PROCEDURES

6.1 Introduction

Incident and accident management is a critical function within the PCAP, given the range of activities involving construction, high-voltage electrical systems, lithium battery storage, laboratory chemicals, agricultural machinery, and public-facing transport infrastructure. The purpose of incident management is to protect workers, safeguard communities, minimize environmental damage, ensure business continuity, and maintain compliance with both the World Bank's ESF and the ESCP. This chapter provides clear procedures for reporting, investigating, documenting, and responding to incidents and accidents across all program components.

6.2 Definition of Incidents and Accidents

For the purposes of PCAP, an incident or accident includes any unplanned or unexpected event that causes or has the potential to cause, harm to workers, communities, the environment, physical assets, or program operations. Examples include:

- Workplace injuries or fatalities
- Fires, explosions, or electrical shocks at depots or charging facilities
- Lithium battery thermal runaway events
- Chemical spills in laboratories
- Traffic accidents involving Program vehicles
- Machinery-related accidents in agricultural fields
- Exposure of communities to open trenches or unsafe equipment
- Structural failures or collapse during construction
- SEA/SH allegations or security-related incidents
- Air, water, or soil contamination
- Major equipment failure affecting public safety

Any such event must trigger immediate action according to the procedures outlined in this chapter.

6.3 Immediate Response and Emergency Actions

When an incident occurs, the priority is to protect life, prevent injury, and contain the situation. Contractors, depot operators, laboratory supervisors, or field teams must:

1. Stop work immediately, if required, to prevent further harm.
2. Initiate relevant emergency response measures, such as isolating electrical systems, extinguishing fires, cordoning off the area, or controlling chemical spills.
3. Administer first aid and arrange immediate medical attention for injured persons.
4. Evacuate the area if there is risk of fire, explosion, or hazardous exposure.
5. Inform the site supervisor, contractor's EHS officer, and PIU representative on site.
6. Secure the site to prevent unauthorized access or tampering with evidence.

These first steps ensure a quick and controlled response before formal reporting begins.

6.4 Reporting Requirements

Incident reporting is mandatory under PCAP and must follow the timelines established in the ESCP and World Bank requirements.

6.4.1 Internal Immediate Notification (Within 2 Hours)

All incidents, major or minor must be reported verbally or via phone/WhatsApp by contractors or field teams to the PIU focal person within two hours of occurrence.

6.4.2 Formal Written Notification to PIU (Within 24 Hours)

Within 24 hours, the contractor or implementing team must submit an initial incident report detailing:

- What happened
- Who was involved
- Injuries or damage
- Immediate actions taken
- The current status of the site

6.4.3 World Bank Notification (Within 48 Hours)

For serious or severe incidents, including fatalities, major injuries, fires, explosions, SEA/SH allegations, or significant environmental events, the PIU must notify PCAP-CMU, which then informs the World Bank within 48 hours, as required under the ESCP.

6.4.4 Minor Incidents

Minor incidents (first-aid cases, small spills, minor equipment issues) require internal documentation and inclusion in monthly reports but do not require immediate notification of the World Bank unless they pose potential future risks.

6.5 Classification of Incidents

To prioritize response and reporting, incidents are classified as:

6.5.1 Severe Incidents

- Fatalities
- SEA/SH allegations
- Major fire/explosion
- Widespread contamination
- Structural collapse
- Incident requiring external emergency services

6.5.2 Serious Incidents

- Injuries requiring hospitalization
- Major property damage
- Chemical spills requiring specialized clean-up
- Traffic accidents with public injuries
- Significant environmental impact

6.5.3 Moderate Incidents

- Medical treatment injuries
- Minor equipment failure
- Small-scale chemical spills

6.5.4 Minor Incidents

- First-aid cases
- Near misses
- Unsafe behaviors or observations

This classification guides the depth of investigation, reporting requirements, and corrective actions.

6.6 Investigation Procedures

Following any incident, an investigation must be conducted to determine the immediate causes, underlying factors, and systemic gaps. Investigations must be led by:

- The contractor's EHS officer for minor/moderate incidents
- The supervision consultant and PIU safeguards staff for serious incidents
- PCAP-CMU for severe incidents, with World Bank oversight

6.6.1 Investigation steps

1. Securing the site and preserving evidence
2. Conducting interviews with witnesses and affected persons
3. Reviewing method statements, OHS plans, and equipment logs
4. Identifying root causes using recognized methods such as:

    - ✓ Root Cause Analysis (RCA)
    - ✓ Five Whys method
    - ✓ Fishbone (Ishikawa) diagram

5. Documenting findings in a structured investigation report
6. Recommending corrective and preventive actions

The investigation must be completed within a reasonable timeframe, typically 7-10 days depending on incident complexity.

6.7 Corrective and Preventive Action Plans

Corrective and preventive actions ensure that incidents are not repeated. After the investigation:

- Contractors must prepare a Corrective Action Plan (CAP)
- PIUs must review and approve the CAP
- PCAP-CMU must oversee CAP implementation for serious or severe incidents

A CAP typically includes:

- Hazard elimination or engineering controls

- Improved work procedures or method statements
- Additional OHS training
- Procurement of better equipment or PPE
- Enhanced supervision measures
- Policy or procedural changes
- Community-level safety improvements (if relevant)

The CAP must state who is responsible, the timeline for completion, and how success will be verified.

6.8 Documentation and Record Keeping

Accurate documentation of incidents is essential for legal compliance, monitoring, and learning. For each incident, the following must be recorded:

- Initial incident report
- Investigation report
- Witness statements
- Photographs and sketches
- CAP and follow-up actions
- Training or corrective measures taken
- Closure report confirming completion

All records must be maintained at PIU and contractor levels and submitted to PCAP-CMU during quarterly reporting for consolidation.

6.9 Learning, Training, and Continuous Improvement

PCAP adopts a continuous improvement approach to incident management. Lessons learned from incidents must be disseminated through:

- Toolbox talks
- Monthly EHS meetings
- Training sessions
- Updated method statements
- Revised procedures or checklists

Sharing lessons learned helps prevent recurrence and builds long-term safety culture.

6.10 Coordination with Local Authorities and Emergency Services

In cases involving fire, spills, security issues, public injuries, or road accidents, PIUs and contractors must coordinate with:

- Rescue 1122
- Local police
- District administration
- Fire departments
- Environmental Protection Agency (EPA)
- Local health facilities

These agencies provide support in emergency response and may require submission of official incident reports.

6.11 Incident Reporting in Monitoring Framework

All incidents regardless of severity must be captured in:

- Monthly contractor EHS reports
- Monthly or quarterly PIU safeguards reports
- Consolidated semi-annual reports prepared by PCAP-CMU
- Annual environmental and social performance assessments

Trend analysis from these reports helps identify systemic issues, recurrent hazards, and areas needing targeted training or investment.

7. GRIEVANCE REDRESS MECHANISM

7.1 Introduction

The Grievance Redress Mechanism (GRM) under the PCAP provides a structured and transparent system through which community members, workers, transport users, farmers, businesses, or any affected stakeholder can raise concerns, seek information, or lodge complaints related to the program's environmental, social, operational, or safety aspects. The GRM is designed to enhance accountability, build trust with stakeholders, and ensure timely resolution of issues during planning, construction, and operational phases. It serves as a key instrument for managing community relations and preventing disputes or operational disruptions. The mechanism aligns with the World Bank's Environmental and Social Standard 10 (ESS10), national laws, and the Stakeholder Engagement Plan (SEP) prepared for PCAP.

7.2 Objectives of the GRM

The GRM aims to provide an accessible, fair, and efficient platform for addressing grievances related to program activities. The primary objectives are to:

- Provide an avenue for communities and individuals to voice concerns without fear of retaliation.
- Ensure early identification and resolution of Program-related issues.
- Strengthen relationships between implementing agencies and affected people.
- Enhance transparency and responsiveness in Program decision-making.
- Minimize operational delays by addressing conflicts proactively.
- Support the program's commitment to equitable and socially responsible implementation.

7.3 Scope of the GRM

The GRM covers all environmental, social, health, safety, labor, and operational issues arising from PCAP activities. This includes complaints related to:

- Construction nuisances (dust, noise, traffic disruption).
- Unsafe work practices or community safety risks.
- Labor conditions, wage disputes, or worker treatment.
- Agricultural machinery deployment or service gaps.
- Use of monitoring equipment, laboratories, or public awareness vehicles.
- E-bus depots, charging stations, or battery handling.
- Access to services or inclusion/exclusion issues.
- Impacts on roadside vendors, commuters, or informal workers.
- Gender-related concerns and accessibility issues for women, elderly persons, or persons with disabilities.
- Environmental pollution, waste disposal, or hazardous substance management.

The GRM does not handle issues unrelated to the Program, political matters, or personal disputes beyond its operational scope.

7.4 GRM Structure and Tiers

The GRM operates through a tiered system on PIU and CMU levels to ensure timely and effective resolution at each level.

7.4.1 GRM at PIU level

Tier 1: Site-Level Resolution (PIU-Level)

Complaints received directly at construction sites, depots, or field locations are addressed by the contractor's designated focal person or the PIU field representative. Many minor issues such as noise, traffic disruptions, or worker behavior can be quickly resolved at this stage. Resolution is expected within 3-5 working days.

Tier 2: PIU-Level Resolution (Transport, Agriculture, or Environmental Units)

If issues cannot be resolved at the site, or if complainants prefer higher-level review, the case is escalated to the relevant PIU's GRM focal person. The PIU registers the complaint, assigns responsibility, and convenes relevant staff for resolution. This tier handles medium-level concerns, including recurring nuisances, contractor non-compliance, labor issues, and service-related complaints. Resolutions are expected within 10-15 working days.

7.4.2 GRM at CMU level

Tier 1: Complaint Redressal Cell (CRC)

The Complaint Redressal Cell (CRC) will be constituted duly notified by PD/Program Coordinator P-CAP at CMU and PIU site to address day to day issues of affectees and local communities of the program. The cell will settle the issues within 5 days.

Tier 1: Grievance Redressal Cell (GRC)

The issues which may not be resolved at the CRC level will be sent to the GRC through SSS P-CAP who will place the issue in the GRC the grievance will be resolved within 15 working days. In SEA/SH cases, timelines may be adapted to survivor needs, with confidentiality and referral support prioritized over procedural deadlines.

External Redress (Judicial or Regulatory)

If complainants remain dissatisfied, they may approach external channels such as the Environmental Protection Agency (EPA), Provincial Ombudsman, or local courts. While external redress lies outside the Program, the GRM ensures complainants are informed of their rights and options.

7.5 Channels for Submitting Complaints

GRM provides multiple accessible channels to ensure all stakeholders including vulnerable or marginalized groups can raise concerns easily. These channels include:

In addition to existing provincial grievance mechanisms (e.g., Punjab Portal, Provincial Ombudsman, and IA-specific systems, as detailed in the SEP), Program-affected persons may lodge complaints using the following modes:

1. **Online submission**
   - A prescribed form will be available on the PCAP website.
   - Online forms may also be submitted via PCAP or P&D websites.
2. **By posts**
   - Complaints can be sent to the specified addresses of PCAP-CMU and PIU.
3. **Hotlines**
   - A dedicated landline will be allotted for Program-related complaints.
   - Existing provincial/departmental hotlines may also be used, including:
     - PCAP 1286
     - Provincial 0800-02345
     - EP&CCD 1373
     - PMA 1762
     - PTC 111-582-111
     - Agriculture 0800-15000 and 0800-29000
4. **WhatsApp and SMS**
   - EP&CCD 0335-9232227
   - T&MD 0321-0980980
   - Agriculture 0304-4000172
5. **Email**
   - EP&CCD ddisepa@punjab.gov.pk
   - PTC complaints@ptc.gop.pk
6. **E-Portals and Apps**

- Punjab Portal (www.punjab.gov.pk)
- Punjab Ombudsman Portal (https://ombudsmanpunjab.gov.pk/register-complaint-residential-pakistanis)
- Go Punjab mobile app

Anonymous complaints are accepted and investigated to the extent possible.

7.6 7.6 Registration, Acknowledgement, and Documentation

Every grievance must be formally registered in a GRM database or logbook, regardless of the channel of submission. The record includes:

- Unique grievance ID
- Date of receipt

- Name and contact details (if provided)
- Description of the issue
- Location and affected persons/groups
- Assigned officer or unit
- Resolution timeline
- Actions taken
- Closure status

Complainants must receive an acknowledgement within 2 working days, confirming receipt and explaining the next steps.

7.7 Assessment and Investigation

Once registered, the grievance focal person assesses the nature and urgency of the complaint. Investigations may include:

- Site visits
- Interviews with complainants, witnesses, and contractors
- Review of records, permits, or safeguards documents
- Consultation with technical experts or local authorities

Complex or serious issues such as environmental contamination, SEA/SH allegations, or incidents involving vulnerable groups require deeper investigation and may trigger additional safeguards or protection measures.

7.8 Resolution and Corrective Action

A structured corrective action plan (CAP) is developed to resolve the grievance. Actions may include:

- Adjusting construction schedules or work methods
- Improving signage, lighting, access paths, or traffic safety measures
- Correcting unsafe labor conditions
- Enhancing dust, noise, or waste management measures
- Providing information or clarifications
- Supporting informal workers or vendors during temporary disruptions
- Referring SEA/SH cases to specialized services using survivor-centered protocols

The complainant must be informed of the resolution outcome and given an opportunity to express satisfaction or request further review.

7.9 Special Protocol for SEA/SH Complaints

Complaints involving Sexual Exploitation and Abuse (SEA) or Sexual Harassment (SH) require immediate, confidential, and specialized handling. PCAP follows a survivor-centered approach that ensures:

- Confidentiality and anonymity
- Respect and empathy toward the survivor
- Immediate referral to qualified service providers
- No retaliation or stigmatization

- Non-intrusive validation of the complaint
- Exclusion of standard grievance committees to protect privacy
- Mandatory disciplinary or corrective actions for personnel involved

SEA/SH cases are reported to the World Bank within 24-48 hours in accordance with ESCP requirements, but personal identifying information is not disclosed.

7.10 Grievances Related to Workers

Program workers direct, contracted, or community labor have access to a separate Workers' GRM. This system manages complaints related to wages, overtime, health and safety, supervisor behavior, living conditions, or discrimination. Worker grievances must be handled confidentially, without fear of reprisal, and resolved promptly at the contractor or PIU level.

7.11 Monitoring and Reporting of Grievances

PIUs must compile monthly and quarterly summaries of grievances, including:

- Number of complaints received
- Types of grievances (environmental, social, labor, SEA/SH, etc.)
- Status of resolution
- Timeliness of responses
- Pending cases
- Trends requiring systemic action

PCAP-CMU consolidates these reports and submits semi-annual summaries to the World Bank. These records provide insights into recurring issues, community concerns, and areas where Program design or implementation may require adjustments.

7.12 Disclosure and Communication of the GRM

The GRM must be publicly communicated through:

- Community meetings
- Awareness materials at construction sites
- Posters, banners, or boards at depots and bus stops
- Digital outreach (WhatsApp groups, websites, social media)
- Radio or local announcements in rural areas

Communication materials must be available in Urdu and Punjabi, and accessible formats should be provided for persons with disabilities or limited literacy.

7.13 Continuous Improvement of the GRM

GRM is a dynamic process that evolves based on community feedback, monitoring results, and incident patterns. Annual reviews by PCAP-CMU identify gaps and recommend improvements such as expanded outreach channels, increased staffing, strengthened documentation systems, or revised grievance categories. Lessons from grievances also inform updates to ESMPs, construction methods, community safety procedures, and OHS protocols.

8. EMERGENCY PREPAREDNESS AND RESPONSE

8.1 Introduction

Emergency preparedness and response is a critical component of the PCAP due to the nature of its activities, which include construction works, high-voltage electrical systems, lithium-ion battery storage and charging, operation of fuel testing laboratories, and field deployment of agricultural machinery. These activities introduce risks such as fires, explosions, electrical shocks, chemical spills, traffic incidents, machinery accidents, and emergencies affecting nearby communities. This chapter provides a structured and practical framework for preventing, preparing for, and responding to emergencies to safeguard workers, the public, the environment, and program assets. The procedures align with the World Bank's Environmental and Social Standards, the Environmental and Social Commitment Plan (ESCP), Punjab Occupational Safety and Health regulations, and internationally recognized safety practices.

8.2 Objectives of Emergency Preparedness and Response

The Emergency Preparedness and Response Plan (EPRP) aims to:

- Prevent emergencies through proactive risk identification and mitigation.
- Ensure rapid and coordinated response to protect lives and property.
- Minimize environmental and social impacts during emergency events.
- Establish clear responsibilities among contractors, PIUs, and field teams.
- Strengthen communication, coordination, and decision-making during crises.
- Support recovery and restoration of normal operations.
- Build capacity through training, drills, and continuous learning.

By following these procedures, PCAP ensures that all implementing partners are equipped to handle emergencies across diverse operational settings.

8.3 Types of Emergencies Relevant to PCAP

PCAP activities may encounter various types of emergencies, including:

8.3.1 Fire and Explosion Emergencies

- Lithium-ion battery thermal runaway
- Electrical fires in depots or charging stations
- Fuel or oil fires in workshops
- Short circuits, overheated cables, or system overloading

8.3.2 Chemical and Hazardous Materials Emergencies

- Spills or leaks of laboratory chemicals
- Breakage of chemical containers
- Improper mixing or handling of reagents
- Contamination from hazardous waste

8.3.3 Construction-Related Emergencies

- Trench collapses
- Falling objects
- Scaffolding or structural failures
- Machinery or crane accidents

8.3.4 Transport and Road Safety Emergencies

- Traffic collisions involving Program vehicles or buses
- Pedestrian accidents near work sites
- Road obstructions or public safety hazards

8.3.5 Community Health and Safety Emergencies

- Gas leaks, smoke plumes, or toxic emissions
- Large-scale dust incidents
- Fire spread into community areas

8.3.6 Agricultural Machinery Emergencies

- Machinery rollovers or entanglements
- Injuries caused by blades, belts, or moving equipment
- Accidents during field demonstrations

8.3.7 Environmental Emergencies

- Oil and chemical spills
- Wastewater overflow from depots
- Hazardous waste exposure

Each category requires specific response and mitigation measures outlined in subsequent sections.

8.4 Prevention and Risk Mitigation Measures

Emergency preparedness begins with minimizing the likelihood of incidents. Implementing agencies and contractors must ensure the following preventive measures:

8.4.1 Engineering Controls

- Fire-resistant construction materials for battery rooms.
- Adequate ventilation for charging and laboratory areas.
- Overload protection in electrical systems.
- Spill containment pallets in chemical and battery storage zones.
- Secure storage of hazardous materials.

8.4.2 Administrative Controls

- Safe work procedures and technical method statements.
- Restricted access to high-risk areas (battery rooms, chemical storage).
- Clear signage indicating hazards, emergency exits, and muster points.
- Rotating high-risk tasks to prevent fatigue-related incidents.

8.4.3 Personal Protective Equipment (PPE)

- Flame-resistant clothing for battery handlers.
- Gloves, goggles, and aprons for laboratory staff.
- Hard hats, safety shoes, and high-visibility vests on construction sites.

Preventive actions significantly reduce the probability and scale of emergencies.

8.5 Emergency Response Preparedness

All PCAP sites including construction areas, laboratories, depots, charging stations, and machinery demonstration locations must maintain site-specific Emergency Response Plans. These plans must include:

8.5.1 Identification of Key Risks

A hazard analysis that examines electrical, chemical, mechanical, environmental, and social risks for each location.

8.5.2 Emergency Response Teams

Each site must designate trained personnel responsible for:

- First aid
- Fire response
- Evacuation coordination
- Communications
- Hazard containment

8.5.3 Availability of Emergency Equipment

This includes:

- Class A/B/C/D fire extinguishers
- First aid kits
- Spill kits and absorbent materials
- Emergency showers and eyewash stations (for laboratories)
- Emergency lights and alarms
- Fire blankets
- Battery fire suppression tools (e.g., sand, ceramic blankets)

8.5.4 Evacuation Routes and Muster Points

Safe evacuation routes must be clearly marked, unobstructed, and well-lit. Muster points must be located away from high-risk zones.

8.5.5 Communication Protocols

Emergency contact numbers must be displayed prominently and include:

- PIU focal persons
- Local emergency services (Rescue 1122, police, fire brigade)
- Ambulance services
- Nearby health facilities

8.6 Emergency Response Procedures

In case of an emergency, the following general response steps apply:

Step 1 – Raise the Alarm

Any worker or community member who identifies an emergency must immediately alert others by:

- Shouting warnings
- Activating the alarm system
- Calling the site supervisor or emergency focal person

Step 2 – Stop Work and Secure the Area

Work must be halted immediately in the affected area. Machinery must be turned off and power isolated if safe to do so.

Step 3 – Evacuate

Workers and visitors must proceed to designated muster points. Special assistance must be provided to persons with disabilities or injured individuals.

Step 4 – Emergency Response Team Activation

Trained responders address the emergency using appropriate equipment.

Step 5 – Call External Emergency Services (If Needed)

Rescue 1122 or firefighting teams must be contacted for large fires, severe injuries, or chemical spills.

Step 6 – Provide First Aid

Trained personnel administer first aid until professional help arrives.

Step 7- Prevent Escalation

Response teams must take actions such as:

- Cooling overheated batteries
- Containing chemical spills
- Isolating fuel or electrical sources
- Securing hazardous materials

Step 8- Record the Event

The incident must be documented following the procedures detailed in the Incident and Accident Management chapter.

8.7 Emergency Response for Lithium-Ion Battery Fires

Given PCAP's extensive use of electric buses and charging stations, special protocols must be followed during battery emergencies.

9. ENVIRONMENTAL AND SOCIAL MONITORING & REPORTING FRAMEWORK

9.1 Introduction

Environmental and social monitoring is essential for ensuring that the PCAP is implemented in a safe, compliant, and responsible manner. Given the diversity of program activities from depot construction and agricultural machinery deployment to laboratory operations, digital monitoring systems, and charging infrastructure continuous oversight is required to verify that mitigation measures are effective and risks remain controlled. This chapter outlines the monitoring mechanisms, responsibilities, tools, and reporting requirements necessary to maintain compliance with the World Bank ESF, the ESSA, and the ESCP.

9.2 Objectives of Environmental and Social Monitoring

The monitoring framework aims to:

- Ensure that environmental and social mitigation measures identified in ESIAs, ESMPs, CEMPs, SMPs, and OHS plans are effectively implemented.
- Verify compliance with national regulations, World Bank standards, and contractual obligations.
- Detect deviations, failures, or non-compliances early and facilitate corrective actions.
- Assess effectiveness of risk mitigation strategies and adjust them when necessary.
- Generate evidence-based information for internal decision-making and external reporting.
- Support continuous improvement and learning across PCAP implementing entities.

9.3 Types of Monitoring Under PCAP

Monitoring under PCAP occurs at multiple levels and through various methods.

1. Compliance Monitoring

Assesses whether contractors and operators follow the requirements outlined in ESMPs, CEMPs, OHS plans, and regulatory permits.

2. Effects Monitoring

Evaluates environmental or social conditions during implementation, such as air quality at construction sites, wastewater discharge levels, or noise levels in populated areas.

3. Performance Monitoring

Measures the effectiveness of mitigation actions, corrective actions, training programs, and safety measures.

4. Community Monitoring

Involves community feedback, GRM records, and observations from consultations to understand public concerns and experiences.

5. Regulatory Monitoring

EPA inspections, labor department audits, and safety authority assessments complement internal monitoring.

Each monitoring type contributes to a comprehensive understanding of safeguards performance.

9.4 Monitoring Responsibilities

Monitoring responsibilities are distributed among various entities according to their mandate.

Contractors

- Conduct daily inspections at construction sites, depots, and operational areas.
- Implement monitoring checklists for waste management, OHS, and environmental controls.
- Maintain logbooks and submit weekly monitoring reports to the supervision consultant.

Supervision Consultants

- Verify contractor compliance through routine inspections.
- Document findings in weekly and monthly reports.
- Recommend corrective actions and track their implementation.
- Provide technical support to PIUs on monitoring tools and procedures.

PIUs (Transport, Agriculture, Environment)

- Conduct periodic field inspections.
- Validate contractor and consultant reports.
- Review environmental sampling results, waste disposal documents, and incident logs.
- Prepare consolidated monthly and quarterly reports for PCAP-CMU.

PCAP-CMU

- Consolidate program-wide monitoring reports.
- Conduct oversight monitoring and field validation missions.
- Identify systemic risks, gaps, or recurring non-compliances.
- Submit semi-annual environmental and social performance reports to the World Bank.

Regulatory Bodies (EPA, Labor Department)

- Conduct external inspections and enforce corrective actions when regulatory non-compliance is observed.

9.5 Environmental Monitoring Parameters

Environmental monitoring for PCAP is based on relevant regulatory standards and Program-specific ESMPs. Typical parameters include:

Air Quality

- $PM_{2.5}$ and PM_{10} levels near construction areas
- Dust control effectiveness
- Emissions from machinery or generators

Water and Wastewater

- Effluent quality from bus washing facilities

- Presence of oil, grease, or suspended solids
- Groundwater or drain contamination risks

Noise and Vibration

- Noise levels near residential or sensitive receptors
- Compliance with timing restrictions
- Vibration impacts near structures

Waste Management

- Waste segregation effectiveness
- Disposal documentation and manifests
- Storage conditions of hazardous waste

Chemical and Battery Management

- Condition of storage areas
- Spill response readiness
- Inventory control and MSDS availability

Regular sampling may be required for specific locations (e.g., depots, laboratories).

9.6 Social Monitoring Parameters

Social monitoring focuses on ensuring inclusive, safe, and socially responsible operations. Key parameters include:

Labor and OHS

- Worker grievance records
- Availability and use of PPE
- Compliance with labor laws and OHS plans
- Working hours, wages, and living conditions

Community Health and Safety

- Traffic management effectiveness
- Pedestrian safety measures
- Public access during construction
- Incidents affecting communities

Gender and Inclusion

- Accessibility of infrastructure for women and persons with disabilities
- Effectiveness of SEA/SH prevention measures
- Participation of vulnerable groups in consultations
- Impacts on informal workers or small businesses

Stakeholder Engagement

- Consultation records
- Community feedback
- Awareness campaign effectiveness

This monitoring ensures social issues are identified early and resolved promptly.

9.7 Monitoring Tools and Methods

Monitoring is conducted using practical tools, including:

- Daily inspection checklists
- Weekly EHS walkthroughs
- Photographic evidence
- Community feedback logs
- Environmental sampling (air, water, noise)
- Waste disposal manifests
- Equipment maintenance logs
- Incident and near-miss registers
- Stakeholder consultation records
- GRM registers

These tools standardize monitoring across all sites and implementing agencies.

9.8 Reporting Requirements

Reporting is mandatory and structured across program entities.

Contractors

- Daily logs and weekly compliance reports
- Monthly EHS performance reports

Supervision Consultants

- Weekly inspection reports
- Monthly consolidated environment and social performance reports

PIUs

- Monthly environmental and social progress reports
- Quarterly consolidated reports for each component (transport, agriculture, environment)

PCAP-CMU

- Semi-annual program-wide environmental and social performance report for the World Bank
- Annual summary report covering safeguards performance trends

All reports must include data on compliance status, monitoring results, incidents, grievances, corrective actions, and improvements.

9.9 Corrective Action and Follow-Up

Monitoring results must lead to timely action. When non-compliance is detected:

- Non-compliance notice is issued.
- The contractor must prepare a Corrective Action Plan (CAP).
- Supervision consultants and PIUs verify implementation.
- PCAP-CMU monitors systemic issues and escalates unresolved cases.

Persistent non-compliance may result in financial penalties, work stoppages, or contract termination in accordance with contract conditions.

9.10 Integration of Monitoring with GRM and Incident Management

Monitoring is closely linked to both the GRM and the incident management system. Complaints received through the GRM, or issues highlighted during incident investigations must inform future monitoring requirements. Patterns such as repeated grievances or recurring safety hazards require:

- Updated ESMPs
- Revised procedures
- Additional training
- Equipment upgrades
- Policy adjustments

This integrated approach ensures continuous improvement in environmental and social performance.

9.11 Continuous Improvement

The monitoring framework is designed to evolve over time based on lessons learned, stakeholder feedback, internal evaluations, and updates to regulatory or World Bank requirements. PCAP-CMU, in collaboration with PIUs, should periodically review monitoring tools, indicators, capacity needs, and reporting structures to strengthen safeguards performance. Regular refresher trainings and capacity-building programs further enhance the effectiveness of monitoring systems.

ANNEXURES

Annexure-I Environmental Screening Form

Environmental Screening Form (PCAP)

Program Name					
Activity Name					
Facility Name					
Exclusion Criteria					
Will the activity cause significant, long-term, or irreversible environmental impacts? Yes____ No_____					
Is the site within or affecting protected areas, forests, wetlands, or other sensitive ecological zones? Yes____ No_____					
Will the project generate hazardous waste beyond the capacity of local waste management facilities? Yes____ No_____					
Will the activity involve major construction requiring a full Environmental Impact Assessment (EIA) under Punjab EPA regulations? Yes____ No_____					
Site Details					
City/Town/Village		Union Council		Tehsil	
District			Province		
GPS Coordinates		N			E

Description of Proposed Works	
Nature of Work	(e.g., AQ monitoring installation, transport retrofits, EV infrastructure, agricultural machinery upgrades)
Size of land for proposed Work	
Type of land for proposed work	
Total cost of the proposed Work	Including of total Program cost

SECTION 1: Environmental Condition of Site					
	Question	**Yes**	**No**	**Expected**	**Remarks**
1.1	Is the site located near drains, canals, or water bodies?				
1.2	Are there sensitive receptors (schools, hospitals, residences) within 200 meters?				
1.3	Will machinery installation or minor civil works be required?				
1.4	Will the activity generate noise, dust, or emissions?				
1.5	Will hazardous materials (oils, batteries, electronics) be stored or used?				
SECTION 2: Potential Environmental Impacts					
	Question	**Yes**	**No**	**Expected**	**Remarks**
2.1	Dust, noise, or emissions from equipment				
2.2	Soil disturbance or contamination				
2.3	Waste generation (construction debris, packaging)				
2.4	Traffic disruption				
	Operation Phase				
2.5	Generation of **e-waste** (sensors, electronics, batteries)				
2.6	Noise or emissions from operating equipment				
2.7	Risk of chemical or fuel leakage				
2.8	OHS hazards for workers				
SECTION 3: Air Quality & Climate Considerations					

3.1	Will the activity reduce emissions ($PM_{2.5}$, PM_{10}, NO_x, SO_2, BC, CO)?				
3.2	Does the intervention promote fuel efficiency or cleaner fuel use?				
3.3	Does it strengthen monitoring (CEMS, AQMS, mobile sensors)?				
3.4	Any risk of increased GHG emissions?				
SECTION 4: Natural Resource Use					
4.1	Will the activity consume significant water or energy?				
4.2	Are construction materials required?				
	SECTION 5: Occupational Health & Safety				
5.1	Are workers exposed to dust, fumes, or noise?				
5.2	Is PPE mandatory?				
5.3	Are electrical hazards (EV chargers, monitoring equipment) possible?				
	SECTION 6: Waste & Pollution Management				
6.1	Will the intervention generate solid waste?				
6.2	Will the activity generate **hazardous or e-waste**?				
6.3	Are safe disposal mechanisms available?				
6.4	Will licensed waste handlers be used?				

1. Latest and historical satellite images
2. Site photographs
3. Layout maps, access routes
4. Waste management arrangements

Prepared By: Name: _____
Designation: _____
Date: _____

Reviewed & Approved By:

Name: _____
Designation: _____
Date: _____

Annexure-II
Social Screening Form

Program Name					
Activity Name					
Facility Name					
Exclusion Criteria					
Will the land parcel require displacement of more than 200 individuals? Yes____ No_____					
Have any Anti-Encroachment Drives (AEDs) been conducted after December 9, 2024? Yes____ No_____					
Site Details					
City/Town/Village		Union Council		Tehsil	
District		Province			
GPS Coordinates		N		E	
Description of Civil Works					
Nature of land	Agriculture, commercial, residential, industrial, barren etc.				
Size of land					
Type of land					
Total cost of the land	Including of total Program cost				

SECTION 1: Land					
	Question	**Yes**	**No**	**Expected**	**Remarks**
1.1	Does the activity involve physical construction works/civil works? Please elaborate in the "Remarks" column.				

1.2	Are the civil works expected to have impacts on land, assets, and people? If “Yes”, resettlement plan must be prepared prior to commencement of construction. Record answers for all questions in checklist to inform RP.				
1.3	Will the civil works be conducted on government owned or public land/private land?				
1.4	Does the government owned or public land have any occupation (agriculture, settlements, structures, informal settlers)?				
1.5	Will civil works be conducted on private or communal land for which land acquisition will be required?				
SECTION 2: Potential Impacts, Assess the potential for each impact listed below.					
	Question	**Yes**	**No**	**Expected**	**Remarks**
2.1	Permanent or long-term impacts on land that affect productivity.				
2.2	Loss of residential land				
2.3	Partial loss of dwellings and structures				
2.4	Full loss of dwellings and structures				
2.5	Loss of assets other than land, including crops, infrastructure, and other improvements to the land				
2.6	Loss of livelihoods and employment				
2.7	Relocation and resettlement				
2.8	Loss of security of tenure				
SECTION 3: Affected Persons					
3.1	Number of PAPs (specify male and female)				
3.2	Number of titled land owners				
3.3	Number of users/settlers (including tenants, sharecroppers, leaseholders, laborers)				
3.4	Number of encroachers and squatters				
SECTION 4: Disadvantaged/Vulnerable Individuals and Groups					

4.1	Are there any disadvantaged or vulnerable individuals and groups affected by land acquisition or involuntary resettlement? This may include but is not limited to: the poor, elderly, handicapped, female heads of households, women, and ethnic and religious minorities.				
4.2	Number of disadvantaged/vulnerable individuals				
4.3	Describe the nature of impacts for each disadvantaged/vulnerable group identified.				

Note:

1. Latest and historical satellite images.
2. Latest pictures
3. Provision of a certificate that no persons have been forcibly removed from the area since the inception of the Program/ year when Program initiated.

Annexure-III

Environmental & Social (E&S) Checklist for Deployment of Super-Seeders

A. Administrative & Screening Requirements (Mandatory Before Deployment)

1. ESSA Compliance Confirmation

☐ This checklist has been completed and submitted to PCAP-CMU.
☐ PCAP-CMU has reviewed and approved deployment.
☐ Confirmation recorded in PSC meeting minutes.

2. Site Eligibility (ESSA Exclusion Criteria)

☐ No involuntary resettlement / displacement of persons.
☐ No land acquisition or restriction of access involved.
☐ Site is not located in protected areas, forest reserves, or culturally sensitive areas.
☐ No ESSA-excluded activities (e.g., land conversion of natural habitats).

3. E&S Field Screening

☐ Soil health & erosion risk assessed.
☐ Proximity to water bodies/drainage assessed.
☐ Biodiversity considerations reviewed (no ecologically sensitive habitat).

B. Key Environmental Risk Controls (ESSA-Identified Risks)

4. Soil Disturbance & Degradation Control

☐ Soil moisture & field conditions assessed before operation.
☐ Operation depth and speed adjusted to prevent compaction.
☐ Multi-pass operations avoided unless agronomically justified.

5. Air Quality & Dust/Emissions Management

☐ Moisture conditions adequate to minimize dust.
☐ Tractor maintained (clean air filter, serviced engine).
☐ No visible excessive dust during operation (stop & correct if observed).

6. Biodiversity, Habitat & Monoculture Risk Management

☐ No disturbance to natural vegetation or wildlife habitat.
☐ Use of super-seeders does not promote harmful monoculture without mitigation.
☐ Crop-rotation guidance provided to farmers.

7. Chemical Use & Integrated Pest Management (IPM)

☐ Farmers informed about reduced tillage practices and impact on weeds/pests.
☐ IPM guidelines shared to prevent increased herbicide/pesticide reliance.
☐ No banned or highly hazardous pesticides allowed.

8. Waste & Hazardous Materials Management

☐ Used oil, filters, grease cartridges collected for safe disposal.
☐ Any e-waste components stored safely (until provincial procedures available).

C. Occupational Health & Safety (OHS) – ESSA Priority Risk

9. Operator & Worker Safety

☐ Operator is trained.
☐ PTO shields, guards, and hydraulic lines inspected and functional.
☐ Safe refueling SOP followed.

D. Social Inclusion, Equity & Participation (ESSA Priority Risk)

10. Farmer Consent & Participation

☐ Written consent of the farmer obtained.
☐ Farmer briefed on benefits, operational limitations, and safety.
☐ No coercion or pressure involved in field selection.

11. Inclusion of Women, Illiterate & Disabled Farmers

☐ Women farmers informed and encouraged to access services.
☐ Illiterate/digitally excluded farmers provided assisted booking.
☐ No exclusion based on gender, literacy, or disability.

12. Livelihood Risk Mitigation

☐ Deployment does not adversely impact informal laborers.
☐ Awareness provided on alternative farm operations available.
☐ No enforcement actions linked to machinery use that may harm livelihoods.

13. Grievance Redress Mechanism (GRM)

☐ Local GRM number displayed on Super Seeder & shared with farmers.
☐ GRM includes SEA/SH-sensitive reporting pathway.
☐ All complaints logged and forwarded to PCAP-CMU within 24 hours.

E. Monitoring & Reporting

14. Monitoring Requirements

☐ Any environmental or social incidents reported same day.
☐ Monthly E&S monitoring report submitted to PCAP-CMU.

Annexure-IV

Standard Resettlement Plan (RP) Template

In case the impact of Program is severe and displacing more than 200 people (40-50 families), a detailed Resettlement Plan will be prepared provided with following elements:

1. **Description of the Program**. General description of the Program
2. **Potential impacts and actions taken to mitigate these impacts Identification of***:*
   a) the Program components or activities that give rise to displacement, explaining why the selected land must be acquired for use within the timeframe of the Program;
   b) the zone of impact of such components or activities;
   c) the scope and scale of land acquisition and impacts on structures and other fixed assets;
   d) any Program-imposed restrictions on use of, or access to, land or natural resources;
   e) alternatives considered to avoid or minimize displacement and why those were rejected; and
   f) the mechanisms established to minimize displacement, to the extent possible, during Program implementation.
3. **Objectives.** The main objectives of the resettlement program*.*

   Census survey and baseline socioeconomic studies. The findings of a household-level census identifying and enumerating affected persons, and, with the involvement of affected persons, surveying land, structures and other fixed assets to be affected by the Program.

   Applicability of Legal framework.
4. **Institutional framework***.* The findings of an analysis of the institutional framework covering*:* the identification of agencies responsible for resettlement activities
5. **Eligibility.** Definition of displaced persons and criteria for determining their eligibility for compensation and other resettlement assistance, including relevant cutoff dates.
6. **Valuation of and compensation for losses**
   a) Community participation.
   b) institutionalized arrangements by which displaced people can communicate their concerns to Program authorities throughout planning and implementation, and measures to ensure that such vulnerable groups as indigenous people, ethnic minorities, the land- less, and women are adequately represented.
7. **Implementation schedule***.* An implementation schedule providing anticipated dates for dis- placement, and estimated initiation and completion dates for all resettlement

plan activities. The schedule should indicate how the resettlement activities are linked to the implementation of the overall Program.

8. **Costs and budget**. Tables showing categorized cost estimates for all resettlement activities, including allowances for inflation, population growth, and other contingencies; timetables for expenditures; sources of funds; and arrangements for timely flow of funds, and funding for resettlement, if any, in areas outside the jurisdiction of the implementing agencies.
9. **Grievance redress mechanism***.* The plan describes affordable and accessible procedures for third-party settlement of disputes arising from displacement or resettlement; such grievance mechanisms should take into account the availability of judicial recourse and community and traditional dispute settlement mechanisms.
10. **Monitoring and evaluation**. Arrangements for monitoring of displacement and resettlement activities by the implementing agency, supplemented by third-party monitors as considered appropriate by the Bank, to ensure complete and objective information; performance monitoring indicators to measure inputs, outputs, and outcomes for resettlement activities; involvement of the displaced persons in the monitoring process; evaluation of results for a reasonable period after all resettlement activities have been completed; using the results of resettlement monitoring to guide subsequent implementation.
11. **Arrangements for adaptive management**. The plan should include provisions for adapting re- settlement implementation in response to unanticipated changes in Program conditions, or un- anticipated obstacles to achieving satisfactory resettlement outcomes.

Annexure-V

Standard Environmental and Social Impact Assessment (ESIA) Template

1. Project Information

- Project Title
- Implementing Agency / Department
- Location (District / Tehsil / Coordinates)
- Project Components & Activities
- ESIA Study Conducted By (Consultant / Team)
- Date of Assessment

2. Applicable Standards & Legal Framework

- National environmental laws & regulations
- Provincial policies & rules
- Donor/Institutional safeguards (if applicable)
- Relevant Sector Guidelines

3. Baseline Conditions (Summary)

- **Physical Environment:** (air, water, soil, noise, climate, etc.)
- **Biological Environment:** (flora, fauna, habitats, protected areas, etc.)
- **Social Environment:** (population, livelihoods, vulnerable groups, infrastructure, land use, cultural heritage, etc.)

4. Identified Impacts

1. Air Quality
2. Water Resources
3. Soil / Land
4. Biodiversity
5. Noise / Vibration
6. Community Health & Safety
7. Land / Livelihood
8. Vulnerable Groups
9. Cultural Heritage

5. Mitigation Measures

- Impact-specific control measures
- Pollution prevention strategies
- Resource conservation actions
- Social risk mitigation (livelihood, land, safety, inclusion)

6. Environmental & Social Management Plan (ESMP) Requirements

- Monitoring Indicators:
- Responsible Parties:
- Monitoring Frequency:
- Budget Allocation for ESMP Implementation:

7. Stakeholder Consultation & Disclosure

- Public Consultations Conducted (Date & Venue):
- Key Stakeholders Engaged: (community, departments, women groups, contractors, etc.)
- Major Concerns Raised & Response:
- Information Disclosure Method: (meetings, reports, websites, notifications, etc.)

8. Institutional & Implementation Arrangements

- ESMP Implementing Unit / Focal Person:
- Roles & Responsibilities Defined: (Yes/No)
- Training on Environmental & Social Safeguards Plan

9. Key Risks Requiring Attention

- Environmental risks
- Social risks
- OHS and Labor risks
- GBV/SEA risks
- Climate vulnerability and disaster risks

10. Conclusion & Recommendations

- Overall impact acceptability (Acceptable / Manageable / Requires redesign)
- Clearance conditions (if any)
- Improvement recommendations

Annexure-VI

Standard Environmental and Social Manage Plan Template

1. Project Information

- Project Title:
- Implementing Agency / Department:
- Location (District / Tehsil / Coordinates):
- Key Activities / Construction Interventions:
- ESMP Prepared By (Consultant / E&S Team):
- Date of ESMP

2. Applicable Policy & Guidelines

- World Bank Environmental and Social Framework (if applicable)
- National and Provincial environmental & social regulatory requirements
- Sector-specific E&S guidelines

3. Summary of Key Risks & Impacts

- Environmental: (air, noise, water, soil, waste, ecosystem disturbance, etc.)
- Occupational Health & Safety (OHS): (injuries, working conditions, PPE, site hazards, etc.)
- Social: (livelihood, access restriction, community safety, land, inclusion, etc.)
- Labor: (working conditions, child/forced labor, wage, worker GRM, etc.)
- GBV/SEA/SH: (awareness, codes of conduct, reporting channels, etc.)
- Climate / Disaster Vulnerabilities: (flooding, earthquakes, slope instability, etc.)

4. Mitigation & Monitoring Plan

Risk / Impact	Mitigation Measures	Monitoring Indicator	Frequency	Responsible Entity
Air Emissions	Dust suppression, covers, water sprinkling	PM levels, visible dust control		
Noise & Vibration	Equipment servicing, barriers, restricted timing	dB levels at receptors		
Water Pollution	Silt traps, no discharge of chemicals	Visual inspection, water quality		
Waste Management	Segregation, licensed disposal	Waste records, site cleanliness		
Biodiversity	Avoid sensitive areas, tree protection	No-go adherence, tree survival rate		
OHS Hazards	PPE, barricading, safe signage	% workers wearing PPE, incident log		

Community Safety	Traffic plan, awareness, access mgmt	Complaint records, safety audits		
Livelihood / Access	Alternative access, work scheduling	Uninterrupted access pathways		
Labor Conditions	Contracts, no child labor, fair wages	Labor registers, wage slips		
GBV/SEA/SH	Training, code of conduct, reporting system	#staff trained, signed CoC		

5. Grievance Redress Mechanism (GRM)

- Worker GRM
- Community GRM
- GRM Focal Person / Contact:
- Response Time for Grievances
- Grievance Register Maintained

6. Capacity Building & Training

- Induction on E&S and OHS safeguards
- Tool-box talks (daily/weekly)
- Contractor, consultant & focal person training schedule

7. Implementation Budget Allocation

- E&S Mitigation & Monitoring Budget
- Included in BOQ / Contract

8. Compliance & Reporting

- Site inspection reports maintained
- Monthly/Quarterly ESMP compliance reporting
- Incident/accident reporting mechanism defined

9. Emergency Preparedness

- Emergency contact list displayed
- Fire safety arrangements, first-aid kits, evacuation plan ☐ Available

10. ESMP Conclusion

Annexure-VII

Standard Contractor's Environmental and Social Management Plan Template

1. Contract & Project Details

- Project / Subproject Title:
- Contract Package / Lot No.:
- Location (District / Tehsil / Coordinates):
- Client / Implementing Agency:
- Main Contractor:
- C-ESMP Prepared By (Name & Position):
- Date of Submission:

2. Reference Standards & Compliance Requirements

- National & provincial E&S regulations
- Client contract clauses, E&S obligations in BOQ/Specifications
- Donor safeguards (if applicable) including IFC Performance Standards

3. Scope of Works

- Summary of construction activities, workforce size, equipment, and key site interventions.

4. Key Risks & Mitigation Measures

E&S Aspect	Contractor Mitigation Measures	Monitoring Evidence / KPI	Frequency	Responsible Person
Air/Dust Control	Water sprinkling, stockpile covering, reduced speed on haul roads	Dust suppression log, site photos, no complaints		Site EHS Officer
Noise Management	Servicing equipment, silencers, restricted work hours	Noise checks, maintenance records		Site EHS Officer
Water/Soil Protection	Silt traps, spill kits, no chemical discharge, equipment fueling on lined surfaces	Spill logs, silt trap inspection		Site Supervisor
Waste Management	Segregation, temporary storage, licensed disposal	Waste disposal receipts, register		EHS Officer
Biodiversity / Trees	No-go zones, protect trees, compensate loss, avoid sensitive sites	Tree protection plan, survival %		Site Engineer
Traffic & Community Safety	Approved Traffic Management Plan, signage, flagmen, awareness	TMP inspections, zero accident target		TMP In-charge

E&S Aspect	Contractor Mitigation Measures	Monitoring Evidence / KPI	Frequency	Responsible Person
OHS / Site Hazards	PPE enforcement, barricades, safe access, tool-box talks	PPE compliance %, incident register		Site EHS Officer
Labor Conditions	No child/forced labor, contracts, equal opportunity, timely wages	Labor register, wage slips, signed contracts		HR Manager / Admin
Worker Code of Conduct	Signed CoC by all staff including clauses on SH/GBV/SEA	CoC signed %, training records		EHS / HR
GBV/SEA/SH Awareness	Mandatory trainings, reporting system, focal point, anonymous complaint channel	Number of workers trained		Focal Person
Material Sourcing	Borrow areas, quarries, asphalt plants from approved/licensed vendors	Source approval record		Procurement

5. Grievance Redress Mechanism (GRM)

- Worker GRM
- Community GRM
- GRM Focal Person & Contact
- Response Timeline
- Register Maintained

6. Plans to be Attached (as applicable)

- Site Layout Plan showing waste area, fueling zones, first-aid point, storage
- Traffic Management Plan (TMP)
- Waste Disposal & Segregation Plan
- Health & Safety / Emergency Response Plan
- Tree Protection / Replantation Plan
- Labor List & Contracts
- Code of Conduct Signed Sheets

7. Monitoring & Reporting

- Daily EHS inspections + site log
- Monthly C-ESMP compliance report to client
- Incident / accident reporting within 24 hours to IA

8. Emergency Preparedness

- First Aid Kits
- Fire Extinguishers
- Emergency Contact List Displayed

- Evacuation Plan Briefed to Staff

9. Workforce & Training

- Total Workforce on Site
- EHS Induction Conducted
- Tool-box Talks Planned

10. Budget & Implementation

- C-ESMP Implementation Budget Allocation
- Inclusion in Contract BOQ
- Estimated Budget

11. Contractor Self-Declaration

12. Client Review Section

Annexure-VIII

Occupational Health and Safety (OHS) Plan Template

1. OHS Policy Statement

The Contractor commits to providing a safe and healthy workplace for all workers, visitors, and nearby communities. This includes prevention of injuries, enforcement of safety protocols, provision of PPE, regular trainings, hazard control at source, emergency preparedness, and compliance with national/provincial regulations and project contractual OHS obligations. All site staff are required to follow safety instructions, report hazards, and stop unsafe work.

2. Hazard Identification & Risk Assessment

- Identify all site-specific hazards prior to commencement of works including excavation risks, electrical hazards, chemicals, hot works, height-related risks, and battery charging zones.
- Risk rating to classify hazards as High (H) / Medium (M) / Low (L) and record in a HIRA register maintained by the Site EHS Officer.

3. Control Measures

- **PPE requirements:** Safety helmets, reflective vests, safety boots, gloves, goggles, ear protection, harnesses for height works; PPE compliance enforced (100% target).
- **Electrical safety:** Licensed electricians, insulated tools, proper grounding, cable management, lock-out/tag-out practice.
- **Battery/charging station safety:** Dedicated, ventilated charging zones, fire safety nearby, labeled charging points, no unauthorized access.
- **Safe excavation:** Shoring/sloping, barricades, warning signage, underground utilities check before digging.
- **Chemical storage safety:** Bunded storage, MSDS available, labels, restricted access, spill kits placed.
- **Hot work procedures:** Work permit system, fire watch, extinguishers available, welding shield and gloves mandatory.
- **Work-at-height rules**: Harness, lifeline, guardrails, non-slip ladder, no work during high winds or rain.

4. Training Plan

- OHS induction for all staff before deployment.
- Tool-box talks: Daily or weekly depending on risk type.
- Specialized training for electricians, machine operators, hot work staff, and workers in charging zones.
- Awareness training including SH/GBV/SEA clauses from signed code of conduct.

5. Incident Reporting & Record Keeping

- Maintain incident/accident logs, near-miss register, PPE issuance record, training attendance, medical cases, and corrective action reports.
- All incidents reported within 24 hours to Client/IA.
- Root cause analysis (RCA) conducted for all High/Medium cases.

6. Emergency Contacts List

- Emergency contact list displayed at: site entry, excavation zone, charging stations, height work hotspots, chemical store, and EHS office.

Emergency Contacts (Contractor Site)

Department / Service	Contact Person	Phone No.
Emergency / Rescue		
Nearest Hospital		
Fire Brigade		
Police Station		
Site EHS Officer		
Project Focal Person		

Contractor Self-Declaration

Annexure-IX

Emergency Preparedness & Response Plan (EPRP) Template

1. Purpose and Scope

To define emergency readiness, response actions, responsibilities, equipment, communication, reporting, and recovery mechanisms for contractor-managed worksites, worker camps, and road interface zones. Applies to all personnel, machinery areas, material stores, battery/charging zones, and nearby communities within the project's influence zone.

1. Site-Specific Hazard Identification

- Worksite hazards: excavation, electrical, chemicals, batteries, hot works, machinery, traffic interfaces, and natural risks.
- Maintain a site Hazard & Vulnerability Register (HVR) with risk classification: H/M/L maintained by the contractor E&S/OHS lead.

4. Emergency Response Teams & Roles

Team / Role	Key Responsibility
Incident Commander	Overall decision-making, coordination, work stoppage authority
Fire Response Team	Fire suppression and scene isolation
Medical / First-Aid Team	Rescue, triage, and casualty management
Traffic Control Team	Traffic halt, safe diversions at incident locations
Battery Safety Team	Isolation and cooling of charging/battery emergencies
Authority Liaison	Emergency coordination with rescue and local authorities
Community Focal Person	Inform affected community and log concerns/grievances

(Team members shall be formally nominated by contractor and records retained at site.)

5. Emergency Equipment & Supplies Inventory

Equipment / Supplies	Qty.	Location	Status
Fire Extinguishers (ABC/CO_2)		Site entry / hot work zone	☐ OK ☐ Needs refill
First-Aid Kits		EHS Office / vehicle / camp	☐ Complete ☐ Gaps
Spill Kits + Absorbents		Chemical storage / fueling	☐ Available ☐ Gaps
Emergency Eyewash/Shower		Chemical handling point	☐ Functional ☐ Gaps
Insulated Rescue Hook		Electrical panel area	☐ Available ☐ Missing
Battery Cooling/Suppression Aids		Charging stations	☐ Available ☐ Missing
Warning Signs & Barricades		Incident risk areas	☐ Adequate ☐ Gaps

Emergency Vehicle		Site / camp	☐ Operational ☐ Faulty

6. Evacuation Routes & Muster Points

- Evacuation routes marked on site maps, reflective at night.
- Muster/Assembly Points: clearly labeled at safe, open areas away from excavation edges, fueling zones, and charging stations.
- Primary Muster Point: Site main gate/open ground; Secondary: Worker camp open area.

7. Communication Protocols

- **Emergency Reporting Chain:** Worker → Supervisor → Incident Commander → PIU/Client → Authorities
- **Internal Alerts:** Siren/whistle, radio/phone broadcast, megaphone at camp/site
- **External Contacts:** Fire brigade, rescue, nearest hospital, traffic police, local administration

8. Response Procedures for Emergency Types

Emergency Type	Key Response Procedure
Fire	Raise alarm → Power isolation → Extinguish → Scene barricade → Fire watch
Chemical Spill	Stop source → Wear PPE → Contain in bund → Absorb → Safe disposal log
Battery Thermal Runaway	Evacuate 10–15m → Isolate zone → Cool with approved method → No water on live system unless safe
Electrical Shock	Power cut → Insulated rescue hook → CPR/first aid → Hospital referral
Machinery Accident	Work stop → Rescue without secondary harm → Medical aid → Secure machinery
Traffic Incident	Traffic halt → Diversion → Casualty support → Authority liaison
Community Incident	Inform focal person → Safe access → Log and address concerns
Natural Hazards	Early warning → Evacuate to muster points → Structural safety check (slopes, excavations)

9. Training & Drill Schedule

Drill / Training	Frequency	Next Due Date	Led By
Site OHS/Emergency Induction	Before deployment		EHS Lead
Fire & Evacuation Drill	Monthly		Incident Commander
Spill & Battery Isolation Drill	Quarterly		Battery Safety Team
First-Aid/CPR Refresher	Bi-Annual		Medical Team Lead

9. Post-Emergency Recovery Plan

- Site hazard clearance only after Incident Commander approval.

- Reinstate access routes, rehabilitate impacted areas, replenish equipment, provide worker/community support, and implement corrective measures from RCA.

10. Reporting & Documentation

- **Initial Notification to PIU**: within 24 hours for serious incidents
- **Documents to Maintain:** Incident form, HVR, permits, logs, attendance of drills, medical records, disposal receipts, RCA, and Corrective Action Tracking Sheet.

Contractor Self-Declaration

I, _____ (designation: _____), confirm that this EPRP will be implemented, drills conducted, equipment maintained, incidents reported, and records retained as per project contractual obligations and regulatory requirements.
Signature: _____ Date: _____

Client/PIU Review

☐ Accepted ☐ Conditional Acceptance ☐ Revision Required
Comments/Conditions: _____

Annexure-X
Traffic Management Plan (TMP) Template

1. Purpose & Objectives

To ensure safe, organized, and uninterrupted movement of vehicles, equipment, workers, pedestrians, and communities around the construction zones. Objectives include: prevention of traffic accidents, reduction of congestion, clear route planning, protection of pedestrians, safe night operations, effective communication, and coordination with local authorities.

2. Traffic Flow and Risk Assessment

- Assess entry/exit points, haul roads, public road interfaces, peak traffic hours, accident-prone locations, pedestrian density, slopes, curves, and night-time visibility risks.
- Document risks in a site Traffic Risk Assessment Register and rate significance as High (H)/Medium (M)/Low (L).
- Include traffic routing maps and interface risk hotspots in the assessment.

3. Mitigation Measures

- **Barricades & signage:** Install durable barricades, reflective warning signs, diversion boards, no-go tapes, and hazard labels at all traffic interfaces.
- **Pedestrian safety routes:** Designated, protected walkways, visible crossing points, and alternative safe access during works.
- **Speed controls:** Enforce speed limits (haul roads ≤20–30 km/h, public interface ≤15–25 km/h), speed breakers, and warning boards.
- **Night-time operations:** Adequate lighting, reflective signage, and restriction of heavy movement where feasible.
- **Night-time lighting**: Solar or electric lights at diversions, pedestrian routes, entry/exit, and charging/fueling areas.
- **Coordination with authorities:** Prior approvals, joint route planning, and incident coordination with local traffic and road safety departments including National Highway Authority and Punjab Traffic Police (as applicable).
- **Vehicle fitness:** All vehicles serviced, drivers licensed, functional headlights, alarms, and reverse horns mandatory.

4. Traffic Controllers / Flagmen Responsibilities

Traffic Controllers/Flagmen shall:

- Guide vehicle movement, enforce diversions, manage pedestrians, monitor driver speed, maintain traffic discipline, stop unsafe movement, ensure signage visibility, assist in incident response, and log daily traffic management activities.

5. Communication & Public Information

- Provide early notifications of road diversions, timings, and alternate access.

- Use public information tools like notices, community briefings, radio, local coordination meetings, and contractor helpline.

6. Monitoring & Adjustments

- Daily inspections by Site EHS Manager / TMP In-charge.
- Monitor complaints, accidents, near misses, and congestion response time.
- TMP to be updated if conditions change, new risks emerge, or access is disrupted.

7. Traffic Controllers / Flagmen Responsibilities

Role / Duty	Responsibility Description	Target / Evidence
Vehicle Movement Control	Direct traffic using flags, whistle, hand signals	Zero congestion / photo logs
Pedestrian Safety	Manage crossings, guide safe walk routes	No accidents / grievance log
Speed Enforcement	Ensure speed limits & assist calming measures	Daily speed spot checks
Diversions	Implement road diversions safely	Reflective signs active
Incident Support	Report and assistance with emergency response	24-hr reporting proof

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8. Monitoring Checklist (Quick KPIs)

- Barricades installed & stable
- Signs visible & reflective
- Pedestrian routes marked & protected
- Speed controls installed
- Night lighting operational
- Coordination evidence with authorities
- Daily log maintained

Annexure-XI

E-Waste Management Plan/SOPs

Punjab Clean Air Program (PCAP)

1. Purpose & Objectives

The purpose of this E-Waste Management Plan is to ensure **safe, compliant, and environmentally responsible handling of all electronic and electrical waste** generated under the Punjab Clean Air Program, including components from AQMS, CEMS, sensors, batteries, electronic parts, communication modules, EV chargers, and related equipment.

Objectives include:

- Prevent environmental contamination from improper disposal.
- Ensure safe collection, storage, transportation, and disposal of e-waste.
- Minimize risks to workers and communities from hazardous materials.
- Comply with **Punjab Environmental Protection Act**, **Hazardous Substances Rules**, and **World Bank ESS3** requirements.
- Promote recycling through certified and licensed e-waste handlers.
- Maintain records and traceability of all e-waste streams.

2. E-Waste Flow Mapping & Risk Assessment

2.1 Identify All E-Waste Streams

E-waste sources may include:

- Air Quality Monitoring equipment (sensors, analyzers, filters, circuit boards)
- Continuous Emission Monitoring Systems (probes, data loggers, modules)
- Batteries (Li-ion, lead-acid, UPS)
- Damaged cables, wires, solar components
- Obsolete IT equipment (routers, modems, tablets, handheld devices)
- Packaging waste from electronic components
- EV charging/diagnostic equipment parts

2.2 Risk Assessment Parameters

Risk assessment shall consider:

- Hazardous components (lithium, heavy metals, acids)
- Fire/explosion risks from batteries
- Soil & water contamination potential
- Risks during handling, storage, and transport
- Informal scavenging or unauthorized recovery
- Weather exposure (rain, heat)
- Proximity to communities or drainage systems

2.3 E-Waste Risk Register

Maintain an **E-Waste Risk Register** and rate risks:

- **High (H)** – potential major environmental/health impact
- **Medium (M)** – manageable with mitigation
- **Low (L)** – minimal impact with basic controls

3. Mitigation Measures

3.1 Segregation & Secure Collection

- Separate e-waste from general waste at source.
- Dedicated labeled bins: Batteries / Circuits / Plastics / Metal frames / Sensors.
- No mixing of hazardous and non-hazardous waste.

3.2 Safe Temporary Storage

- Covered, ventilated, weather-proof e-waste storage area.
- Fire-proof containers for lithium batteries.
- Leak-proof flooring and acid-resistant containment trays.
- “Hazardous Waste – E-Waste Only” signage on storage areas.

3.3 Handling Controls

- Use PPE: gloves, masks, safety shoes, and eye protection.
- No manual dismantling of hazardous components on site.

- Disconnect power sources before removing devices.

3.4 Transportation

- Transport only through **licensed hazardous waste contractors**.
- Maintain chain-of-custody documentation.
- Vehicles must be covered and prevent spills or scattering.

3.5 Final Disposal / Recycling

- Disposal at **Punjab EPA-approved facilities** only.
- Recyclers must maintain compliance with **Hazardous Substances Rules**.
- No disposal in municipal waste streams.

4. Roles & Responsibilities – E-Waste Handlers / Waste Management Team

E-waste coordinators and handlers shall:

- Ensure proper segregation and labeling of e-waste.
- Maintain inventory of all discarded electronic components.
- Conduct weekly checks on storage areas.
- Prevent unsafe practices such as open burning or informal recycling.
- Coordinate with EPA-approved waste contractors.
- Keep records of transport, handover, and disposal certificates.

5. Communication, Training & Awareness

- Workers must be trained on safe handling of electronic waste and batteries.
- Display awareness posters at work sites and storage areas.
- Inform surrounding communities (where relevant) about safe practices.
- Establish a reporting mechanism (helpline or complaint cell).
- Conduct quarterly toolbox talks on updated procedures.

6. Monitoring & Adjustments

- **Daily** inspections by EHS Officer / EWMP In-charge.
- Monitor:

- Storage conditions
- Labeling status
- Fire and spill equipment availability
- Proper segregation
- Unauthorized scavenging attempts

- Review incident reports, complaints, and near misses.

7. E-Waste Handler Responsibilities

Role / Duty	Responsibility Description	Target / Evidence
Segregation	Sort devices, batteries, cables into designated bins	Daily segregation record
Storage Safety	Maintain clean, safe, labeled storage area	Weekly inspection log
Hazard Handling	Use PPE & safe handling protocols	Zero injury reports
Documentation	Maintain inventory, manifests, disposal receipts	Verified disposal certificates
Contractor Coordination	Liaise with certified recyclers	Valid contractor license
Spill/Fire Response	Act immediately & notify supervisor	24-hour incident reporting
Transport Oversight	Ensure secure handover	Chain-of-custody forms

8. Monitoring Checklist (Quick KPIs)

- Segregation bins available and labeled
- E-waste stored in weather-proof, secure area
- Battery containers fire-safe and properly marked
- No mixing of e-waste with general waste
- PPE available and used
- Disposal contractor EPA-certified

- Inventory updated daily
- Incident log maintained
- Spill kits and fire extinguishers available
- Transport manifests maintained

Annexure-XII

Hazardous Chemical Spill Response SOP

1. Identify & Assess the Spill

2. Evacuate Area

3. Contain the Spill

- Use sand/spill booms
- Prevent entry into drains/water
- Wear proper PPE

4. Neutralize (As per MSDS)

5. Collect Waste in Secure Container

6. Decontaminate Area

7. Record & Report the Spill

Annexure-XIII
Workers' Grievance Form

1. Grievance Identification

- Worker Name (Optional): ☐ Prefer to remain anonymous
- Gender: ☐ Male ☐ Female ☐ Other / Prefer not to say
- Contact (Phone/Email):
- Worksite / Camp / Section:
- Department / Contractor Firm:
- Designation / Skill Category: ☐ Skilled ☐ Semi-Skilled ☐ Unskilled ☐ Staff
- Work Type: ☐ Direct Worker ☐ Sub-Contracted ☐ Daily Wage ☐ Other

2. Grievance Information

- Nature of Grievance:
  (Select or describe below – multiple can apply)
  ☐ Wage/Benefit Issue ☐ Working Hours/Overtime ☐ Workplace Injury/OHS
  ☐ Harassment/Discrimination ☐ Camp/Accommodation ☐ GBV/SEA/SH Concern
  ☐ Child/Forced Labor ☐ Contract/Termination ☐ Safety/PPE
  ☐ Other (Specify):
- Detailed Description: *(What happened, where, who was involved, and supporting evidence if available)*

3. Timeline

- Date of Incident / Observation:
- Date of Complaint Submission:
- Complaint Received Through: ☐ GRM Box ☐ Email ☐ Verbal ☐ Helpline ☐ Other

4. Desired Resolution

- Preferred Resolution Requested by Worker:
- Resolution Urgency Level: ☐ High (≤3 days) ☐ Medium (≤7 days) ☐ Low (≤15 days)

5. Evidence Attachment (if available)

☐ Photos ☐ Documents/Copies ☐ Medical report ☐ Witness statement ☐ Other (List):
(All evidence shall be securely filed in the GRM Register.)

Worker Declaration

I submit this grievance voluntarily and request fair review and timely response as per project and contractor obligations.

- Signature / Thumb Impression: _____ Date: _____

6. Response & Action (To be completed by Contractor / PIU / Client)

- Grievance Acknowledged On: Acknowledged By (Name/Title):_____
- Assigned to (Investigation/Action): _____
- Root Cause Analysis Conducted: ☐ Yes ☐ No
- Corrective / Mitigation Action Taken: _____
- Support Provided: ☐ Compensation ☐ Wage cleared ☐ Medical aid ☐ Counseling ☐ PPE issued ☐ Training ☐ Warning/Disciplinary action ☐ Other
- Worker Satisfied: ☐ Yes ☐ Partially ☐ No *(If no/partially, provide next steps below)*

7. Closure & Verification

- Final Resolution Outcome:
- Closure Date:
- Verified By (Supervisor/EHS/PIU/Consultant):
- Sign-off: ☐ Grievance closed ☐ Follow-up monitoring required

8. Confidentiality & Non-Retaliation Commitment

All grievances shall be handled confidentially, fairly, and without retaliation. No worker shall face penalty for submitting a complaint. Records will be retained securely by the contractor and PIU for audit and compliance.

9. Key Performance Targets

- Response Time: ≤7 days (standard), ≤24 hrs (OHS/GBV serious cases)
- Resolution Time: ≤15 days
- Retaliation Tolerance: Zero
- Record Keeping: 100% maintained and auditable

Annexure-XIV
Community Grievance Form

Sr. No	Complainant Information	Details
1	Name	
2	Address	
3	CNIC	
4	Gender	
	PWD 2. Are you a Person with Disability (PWD)?" Yes / No. 3. If "Yes" → Disability Category (multiple-choice / dropdown): I. Physical / Mobility Impairment. II. Visual Impairment (Blind/Low Vision) III. Hearing Impairment (Deaf/Hard of Hearing) IV. Speech/Communication Impairment V. Intellectual/Developmental Disability VI. Psychosocial/Mental Health Disability VII. Other (please specify)	
5	Telephone/Cell Number	
6	Organization	
7	Email	
8	Nature of complaint e.g construction noise, delayed compensation payment, road safety, labor recruitment, any other	
9	Information on authorized representative (if any)	
10	Program/ Project Name	

11	Location	
12	Category of Complaint by Environmental and Social Standard (ESS)*	
13	Upload File	
14	Short description of the problem	

Annexure-XV
Incident Reporting Form (48-Hour Format)

1. Incident Identification

- Date & Time of Incident: *(dd-mm-yyyy | hh:mm)*
- Reported to PIU on (Date/Time): *(dd-mm-yyyy | hh:mm)*
- Incident Discovered By: ☐ Self ☐ Supervisor ☐ Flagman ☐ Worker ☐ Community ☐ Visitor

2. Location Details

- **Location / Worksite:**
- Specific Spot (Chainage / Landmark / Facility): ☐ Road ☐ Camp ☐ Excavation ☐ Charging Station ☐ Store ☐ Height Work ☐ Other:
- GPS Coordinates (If available): *(optional, decimal format)*

3. Type of Incident *(Tick all that apply or specify)*

☐ Injury / Fatality ☐ Fire ☐ Spill / Leak ☐ Battery Failure / Charging Failure
☐ Traffic / Vehicle Accident ☐ Excavation Collapse ☐ Chemical Exposure
☐ Electrical Shock ☐ SEA/SH/Harassment ☐ Community Impact
☐ Equipment Failure ☐ Other (Specify):

4. Incident Description

Description of What Happened: *(Describe sequence, activity at the time, equipment/material involved, weather or site conditions, and any evidence available)*

5. People Injured / Affected

- **People Injured / Affected:**
  (List names/designations or number if anonymous/unidentified. Note severity where known.)
- **Total Injured/Affected:** ☐ Critical ☐ Minor ☐ None

6. Immediate Response

- **Immediate Actions Taken:**
  (e.g., rescue/medical aid, fire extinguishing, spill containment, isolation of charging zone, traffic halt/diversion, work stoppage, authority notified, etc.)
- **Medical Assistance Provided**: ☐ Yes ☐ No
- **Referred to Hospital:** ☐ Yes ☐ No

7. Cause Assessment

- **Root Cause (Initial Assessment):** ☐ Unsafe Act ☐ Unsafe Condition ☐ Equipment ☐ Design ☐ Training Gap ☐ Other: *(Provide brief statement below)*

  _____
  _____
  _____
  _____

8. Follow-Up & Corrections

- **Corrective Actions Required:**
  (Engineering controls, admin actions, training, PPE, signage, disciplinary action, process change, or vendor/equipment review, etc.)
- **Timeline for Corrective Action:** ☐ ≤24 hrs ☐ ≤3 days ☐ ≤7 days ☐ ≤15 days ☐ Other:

9. Reporter Details

- **Name of Reporter: _____**
- **Designation:** ☐ Site EHS Officer ☐ Site Engineer ☐ Supervisor ☐ Flagman ☐ Worker ☐ Other:
- **Contact of Reporter: _____**

10. Reference Standards Followed (if relevant)

- Incident handling and corrective planning aligned with good international practices including ISO 45001 and NEQS Pakistan *(as applicable to the incident type).*

Confidentiality & Non-Retaliation Commitment

Sensitive incidents *(SEA/SH, harassment, discrimination, labor/OHS complaints)* shall be handled confidentially with strict non-retaliation. Identity protection and secure record retention are mandatory.

Document / Evidence Attachment (if available)

☐ Site Photos ☐ Medical Report ☐ Witness Statement ☐ Video ☐ Disposal Receipts ☐ Permit (Hot Work / Height / Electrical) ☐ Other:

Project / PIU Review Section (For IA/PIU/Consultant Use)

- Incident Categorization: ☐ High ☐ Medium ☐ Low
- Work Stoppage Required: ☐ Yes ☐ No
- Approved Corrective Plan: ☐ Accepted ☐ Conditional ☐ Revision Required

- Comments / Conditions:

Incident Closure

- Corrective Actions Completed On: *(dd-mm-yyyy)*
- Verified By: *(Client/PIU/Consultant/Supervisor)*
- Status: ☐ Closed ☐ Follow-up Monitoring Required

Contractor Sign-off

I confirm this incident has been reported accurately, immediate actions were taken, and corrective measures shall be completed and verified within the agreed timeframe.

Signature: _____ Date: _____

Annexure-XVI
Daily Site Inspection Checklist

A. Environmental

- Dust suppression
- Waste segregation & disposal
- Chemical storage safety
- Battery/e-waste storage
- Spill kits available
- Noise & vibration levels
- Wastewater handling
- Housekeeping practices

B. Social & Community Safety

- Barricades/fencing installed
- Signage placed
- Safe pedestrian access
- Traffic management functioning
- Community complaints logged

C. OHS Compliance

- PPE availability
- Toolbox talk conducted
- Safe excavation
- Electrical safety
- Fire extinguishers functional
- First aid box available
- Worker attendance record

Annexure-XVII
Stakeholder Consultation Log

Stakeholder/s:			
Consultation:			
Date:			
Time:			
Meeting venue:			
Attended by:	*Name*	*Occupation*	*Contact*
Conducted by:	•		
Recorded by:			
Language:			
Preamble:			
Picture:			
Stakeholder views, concerns, and suggestions:	•		

Annexure-XVIII
Monthly Environmental & Social Performance Report Format

1. Executive Summary

Provide a concise overview of project E&S performance, key monitoring outcomes, risks managed, consultations, incidents, GRM handling, trainings, and overall compliance.

2. Compliance Status (ESMP / OHS / CEMP)

Plan/Standard	Availability	Implementation Level	Status
Environmental & Social Management Plan (ESMP)	☐ Available ☐ Not Available	☐ High ☐ Medium ☐ Low	☐ Compliant ☐ Partial ☐ Non-Compliant
Occupational Health & Safety (OHS) Plan	☐ Available ☐ Not Available	☐ High ☐ Medium ☐ Low	☐ Compliant ☐ Partial ☐ Non-Compliant
Construction Environmental Management Plan (CEMP)	☐ Available ☐ Not Available	☐ High ☐ Medium ☐ Low	☐ Compliant ☐ Partial ☐ Non-Compliant

3. Environmental Monitoring Results (Air, Water, Noise, Waste)

Aspect	Indicator / Test	Results (Summary)	Standard/Limit Referenced	Frequency	Status
Air	PM / Dust monitoring		NEQS Air Limits		☐ Within limit ☐ Exceedance
Water	Drinking / discharge quality		NEQS Water Limits		☐ Within limit ☐ Exceedance
Noise	dB at receptors		NEQS Noise Limits		☐ Within limit ☐ Exceedance
Waste	Segregation + disposal tracking		Licensed disposal compliance		☐ Complete ☐ Gaps

4. Social Monitoring Results (Labor, Community Safety, Gender)

Aspect	Monitoring Focus / KPI	Findings (Summary)	Responsible Unit/Officer	Status
Labor	Wages, working hours, contracts, child/forced labor		Site HR / E&S Lead	☐ Compliant ☐ Gaps

Community Safety	Traffic safety, access, awareness, risk zones		TMP In-charge	☐ Safe ☐ Partial
Gender	Inclusion, facilities, equal opportunity		E&S Officer	☐ Good ☐ Needs improvement

5. Incident Summary

Date/Time	Type	Severity	Brief Description	Immediate Action	Status
	☐ Injury ☐ Fire ☐ Spill ☐ Battery ☐ Traffic ☐ SEA/SH ☐ Other	☐ Critical ☐ Minor ☐ None			☐ Closed ☐ Follow-Up Required

6. GRM Summary (Workers + Community)

Category	Total Complaints	Resolved (#)	Pending (#)	Avg. Resolution Time	Status
Workers				≤ 15 days target	☐ Good ☐ Needs attention
Community				≤ 15 days target	☐ Good ☐ Needs attention

7. Trainings Conducted

Date	Topic	Trainees	Trainer	Evidence	Status
	E&S Induction / OHS / GRM / SEA&SH Awareness / Waste / TMP	Staff + Labor	E&S Team / Site EHS Lead	☐ List ☐ Photos ☐ Attendance	☐ Completed ☐ Ongoing

9. Good Practices Observed

- List sustainability, protection measures, community coordination, safety excellence, clean site practices, biodiversity protection, waste segregation, innovative controls, etc.

10. Photographs with Captions
(Insert 2–4 captioned supporting photos)

Photo Caption	Description / Evidence Shown

11. Corrective Action Plan & Follow-Up

Issue/Gap Identified	Corrective Action	Timeline	Responsible Person	Follow-Up Status
		☐ 24 hrs ☐ 3 days ☐ 7 days ☐ 15 days	Site EHS / Engineer / HR / Liaison	☐ Verified ☐ In progress

Contractor Submission

- Main Contractor:
- Site EHS Lead / Coordinator:
- Mobile: Email:
- Signature: _____ Date: _____

Client/PIU Review

- ☐ Accepted
- ☐ Accepted with conditions
- ☐ Revision required
  Review Comments:

  _____
  _____
  _____
  _____

Minimum Template Compliance Rules

- All monitoring must reference legally recognized limits.
- Serious incidents (fatality, fire, spills, SEA/SH, electrical) require 24-hr reporting and RCA.
- GRM must ensure non-retaliation, confidentiality, register maintenance, and ≤15-day resolution.
- Evidence to retain: attendance, photos, permits, HIRA/HIRA logs, waste receipts, and inspection reports.

Annexure-XIX

Training Record and Attendance Sheet

Date	Topic	Trainer	Target Group	Participants (#)	Male	Female	PWDs	Signature of Attendees	Remarks

Annexure-XX
Corrective Action Plan (CAP) Template

Non-Compliance / Issue Identified	Root Cause	Corrective Action	Responsible Person	Deadline	Status	Evidence / Remarks
					☐ Open ☐ In Progress ☐ Closed	
					☐ Open ☐ In Progress ☐ Closed	
					☐ Open ☐ In Progress ☐ Closed	
					☐ Open ☐ In Progress ☐ Closed	
					☐ Open ☐ In Progress ☐ Closed	

Annexure-XXI
Contractor Mobilization Checklist

Checklist Item	Verification Details	Acceptable Evidence / Record to be Checked	Responsibility	Status / Remarks
Contract signed	Signed contract including E&S clauses and BoQ items for safeguards	• Signed contract copy • E&S clauses included (waste, OHS, CHS, labor, emergencies, PME)	Program Director CMU/PIU	
Key staff mobilized	Qualified personnel on site with defined E&S focal roles	• Mobilization letter • Attendance log • CVs of key staff • E&S Focal Person nominated	Contractor	
C-ESMP submitted	Comprehensive Construction Environmental Management Plan submitted before physical works	• Submitted plan with version/date • Covers waste, dust, noise, water, soil, materials, emergencies	**Prepare:** Contractor **Review:** E&S Team	
RP/ESMP (site specific) available	Contractor understands and has work-plan alignment with DLI-linked ESMP actions	• Approved RP/ESMP copy • Alignment matrix prepared by contractor	CMU/PIU E&S Team	
OHS Plan approved	OHS plan reviewed and cleared including emergency preparedness and staff training	• Approved OHS plan (signed) • Accident/incident protocol defined • First-aid team named	**Approve:** E&S Team **Implement**: Contractor	
Traffic Management Plan (TMP) approved	Traffic, public safety, detours, flagmen deployment and signage cleared	• Approved TMP (signed) • Map/drawing of routes • Flagmen duty roster • Coordination approvals (if needed)	**Approve:** E&S Team **Implement:** Contractor	
Worker GRM in place	GRM structure is operational and communicated, anonymous reporting allowed	• GRM notification/circular • Complaint register • Posters/signboards • Hotline # active • Worker orientation record	Contractor **Oversight:** E&S Team	

Checklist Item	Verification Details	Acceptable Evidence / Record to be Checked	Responsibility	Status / Remarks
Fire safety equipment mobilized	Fire safety available for machinery, fuel stores, electrical points, battery risks	• Fire extinguisher log • Placement map • Refilling tags • Fire-trained staff attendance sheet	Contractor	
Spill kits available	Spill kits located at fuel areas, machinery yards, storage points	• Inventory list • Photos • Chemical storage inspection log • Refill register	Contractor **Inspect:** E&S Team	
Hazardous material storage compliant	Secure, labeled containment storage with MSDS available	• MSDS file/record • Storage inspection checklist • Secondary containment available	Contractor	
PPE issued	PPE distributed and signed by workers, task-appropriate PPE defined	• PPE issuance log (signed) • Stock inventory • Toolbox training record	Contractor **Verify:** E&S Team	
First-aid & medical arrangements	First-aid kits, trained staff, emergency vehicle access assured	• First-aid training certificates • Kit inspection register	Contractor	
Site fencing installed	Fencing/barricading installed around work zones and excavation points	• Photos/video • Inspection note • Access entry gates marked	Contractor **Inspect:** E&S Team	
Machinery mobilized with safety checks	All equipment inspected for leaks, noise control and safety guards	• Machinery inspection log • Noise/emission compliance report (if applicable)	Contractor	
Fuel storage compliant	Safe fuel storage in ventilated, contained, no ignition sources nearby	• Fuel storage inspection checklist • Signage present	Contractor	

Checklist Item	Verification Details	Acceptable Evidence / Record to be Checked	Responsibility	Status / Remarks
Waste collection points set	Color-coded bins & storage for recyclable, domestic & hazardous waste	• Waste management log • Contractor waste schedule	Contractor	
Electrical safety certified	Temporary electrical supply inspected, grounding and safety devices in place	• Electrical inspection certificate • Lockout/tagout protocol defined	Contractor	
Emergency Response Plan approved	Covers fire, spill, medical, evacuation, extreme weather, security risks	• Approved ERP (signed) • Emergency drill schedule • Drill attendance log	**Approve:** E&S Team **Implement:** Contractor	
Signboards displayed	Citizen-facing and worker-facing boards installed	• Site board • E&S board • GRM board • Speed limits, hazard, direction, and work zone signage	Contractor **Inspect:** E&S Team	
Worker orientation completed	Initial induction conducted covering safeguards and safety protocols	• Orientation attendance record • Training content deck	Contractor	
Insurance for workers & equipment	Active insurance for workers, third-party liability, and equipment	• Insurance copy • Insurance inspection card	Contractor	
Security & access protocol defined	Workforce safety, public access controls, conflict avoidance	• Security circular • Guard duty register (if applicable)	Contractor **Oversee:** E&S Team	