



Punjab Rural Municipal Services Company (PRMSC)



April 2023

Environmental & Social Management Plan

Tehsil Isa Khel, District Mianwali

Punjab Rural Sustainable Water Supply & Sanitation Project (PRSWSS) Pilot Phase, Cluster North
Village Gahi & Makhyal, Tehsil Kallar Kahar, District Chakwal



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1 INTRODUCTION

1.0 General

The Government of Punjab has launched a project for service improvement in rural areas of the Punjab through Punjab Rural Municipal Services Company (PRMSC) which has been established under Section 42 of Companies Act 2017. Project is launched with name of “Punjab Rural Sustainable Water Supply and Sanitation Project (PRSWSSP)” for 16 tehsils/districts of the province with the proposed assistance of the World Bank (WB). Target area is 2000 villages in 16 districts in Punjab including: Khushab, Mianwali, Sargodha, Chakwal, Bhakkar, Pakpattan, Chiniot, Jhang, Rajanpur, Rahim Yar Khan, DG Khan, Lodhran, Bahawalpur, Muzzafargarh, Bahawalnagar and Multan. PRMSC has hired the services of **Techno Consult International Pvt. Ltd.** for the proposed project titled “Consultancy Services for Engineering Design and Construction Supervision of Punjab Rural Sustainable Water Supply & Sanitation Project (PRSWSS) Cluster: North”.

The goal of PRSWSSP is to improve sanitation conditions, provide clean drinking water, improve living conditions through solid waste management, behavior change, and capacity building for the sustainability of the project in rural settlements of Punjab.

This Environmental and Social Management Plan (ESMP) has been prepared for **Tehsil Isa Khel, District Mianwali**. 10 villages from Tehsil Isa Khel are selected for PRSWSSP. This Environmental and Social Management Plan (ESMP) has been prepared for the proposed project in line with World Bank Operational Policies (OPs) and Environmental Social & Management Framework (ESMF). The current study covers various impacts of the design, construction, and operation of water supply, sewerage, and solid waste management facilities. It is to be noted that this ESMP remains a live document, subject to modifications as the project design and technical specifications are finalized or modified prior to the implementation stage.

1.1 Project Background

Punjab is the most populous province of Pakistan with 110 million inhabitants out of which about 70 million reside in rural areas. In 1951 the urban population percentage was only 17 %, which had been surging at the rate of 2.74% and now crossed 37%. At this rate, Punjab’s urban population is likely to cross the rural population. Urban area of Punjab is only 1.37% of the total 205,344 km² area, comprising almost 194 Towns/cities. Cities are the engines of growth, but socio-economic development cannot be achieved without rural areas’ inclusive growth. A significant part of the urban population resides in slums instead of living in well-structured housing areas. Unplanned urban sprawl has compounded the already deplorable condition of civic amenities in the urban areas and generated inconceivable and insoluble quantum of glitches. The prime impetus behind rapid urbanization is to avail better services and chase the economic opportunities. Poverty and Shared Prosperity Report (World Bank 2020) illustrates that 04 out of 05 people below the international poverty lines live in rural areas. Poor water and sanitation conditions lead to severe waterborne diseases, which ultimately hit the vulnerable people directly or indirectly. In this context, it is established that

integrated rural development and improvement of water and sanitation facilities are essential to alleviate poverty, uplift socio-economic conditions and to check the surging urban sprawl.

Despite making significant efforts by the people at the helm of the affairs in Pakistan to improve the prevailing situation, 44% population of Punjab still do not have access to improved water and sanitation facilities as per globally established standards. Reports show that 3 in 5 households in Punjab use E-Coli contaminated water and every 25th household in Punjab lacks access to the improved sources of drinking water. Similarly, the situation of sanitation is also immensely deplorable. Basic sanitation facilities are available to only 76% population which means that every 8th household in Punjab uses open-defecation owing to the absence of basic sanitation facilities. Resultantly, 36 out of 100 children under the age of 5 have impaired growth due to malnutrition. Every 5th child under 5 years of age is too thin of his age, and every 7th child is too short for his height. Stunting prevalence in Punjab is 36.4%, underweight is 23.5 %, and wasting is 15.3 %, which means that 36 out of 100 children under the age of 05 have impaired growth due to malnutrition. Every 05th Child under 05 years age is too thin of his age, and every 7th Child is too short for his height. For every 1000 children born alive, 69 die before their 5th birthday and 41 within their one month of birth.

Through various studies, it has been proven that poor condition of WASH not only affects the health of masses, but it also adversely affects the economic growth of the region. Recently, a number of mega initiatives have been launched by the Government, and international organizations in the urban areas of all provinces of Pakistan for the improvement of water and sanitation but the rural areas still remain neglected. Rural settlements of Punjab, which hold 73 % the province's population living in 23,000 revenue villages, are in dire need for investments to improve WASH.

The Government of Punjab, with the assistance of the World Bank, will finance complete detailed engineering designs through Engineering, Design & Supervision Consultancy Services (EDCS) under the pilot phase project in the revenue villages of Geographical based Cluster North. The services will assist in; (i) design documentation, including Sub-scheme/Project Document (PC-I), Bill of Quantities, for water supply and sanitation services to achieve economies of scale and desired results, and (ii) resident supervision of infrastructure development.

The anticipated environmental and social impacts of the selected villages are mostly localized, site-specific and temporary; few (if any) of them are irreversible and could be easily mitigated through appropriate measures. According to the findings of the Environmental and Social Screening study, this project falls in Category B and requires an ESMP.

As per Punjab Environmental Protection Agency (PEPA), review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations 2022, Schedule-II, EIA is required for 'Water Supply, Sewerage System and Treatment (Category F).

1.2 Objective of ESMP

The objective of this ESMP is the identification of possible environmental and social impacts of the proposed project on both short and long-term bases. Based on the level and nature of these observations, the ESMP delineates proper mitigation measures. As a planning tool, the ESMP aims to ensure that environmental, socio-economic, and cultural issues throughout the entire project lifecycle are anticipated and considered by the project proponent. It also serves as a framework for establishing project controls to reduce or prevent adverse environmental or socio-economic impacts.

Following are the specific objectives of the ESMP:

- Identify social and environmental impacts of the sub-project and related activities including implementation of Standard Operating Procedures (SOPs) for civil works during construction regarding COVID-19.
- Suggest suitable measures for mitigation of identified impacts at planning, designing and implementation stages of sub-project and to avoid, eliminate or reduce their adverse impacts, if any.
- Propose an environmental and social monitoring plan to ensure that mitigation measures are implemented during the sub-project execution and timely corrective actions are taken where required.
- Propose the institutional arrangements required to implement and monitor the ESMP.
- To carry out periodic social and environmental monitoring and ensure compliances and reporting non-compliances in accordance with this ESMP.
- Capacity building of contractor and sub-project staff.

1.3 Scope of ESMP

The preparation of the present ESMP study is based on both primary & secondary data, information, and discussions held with stakeholders that cover:

- Anticipated environmental impacts due to sub-project interventions
- Proposed suitable mitigation measures for each adverse impact
- ESMP including monitoring plan, the operational procedures, institutional responsibilities; and
- Cost estimates of ESMP.

The current ESMP presents a preliminary roadmap for the environment and social management for the construction and operation of the water supply scheme, sewerage network, sewage treatment plant (STP), and solid waste management system in villages of Tehsil Isa Khel.

1.4 Contractual Requirements/ Obligations of ESMP

The impacts and their mitigation measures, summarized in ESMP, will be part of the Bidding Documents to ensure that Contractors implement ESMP recommendations at all project stages. The ESMP requirements will be part of the Contract and the details prescribed in the ESMP will be mandatory. The ESMP will be equally applicable to Subcontractors, including nominated Subcontractors (if any).

At the stage of the bidding process, the Contractor will be instructed to carefully consider the requirements for environmental and social management contained in this ESMP when preparing the bid and pricing the items of Work. The Contractor will need to accept that the prescriptions and clauses detailed in the ESMP are an integral part of the Contract for relevant items of Work; unless separate items are included in the Bill of Quantities (BoQs). The Contractor will need to accept that separate payment will not be made in respect to compliance with the ESMP. The Contractor should, therefore, be aware that in case the Contractor or Subcontractors fail to implement the ESMP recommendations, the Engineer shall take necessary action(s) to ensure that the ESMP is properly implemented and/or to rectify the damages caused by such negligence.

1.5 Proponent and the Consultant

Punjab Rural Municipal Services Company (PRMSC) which has been established under Section 42 of Companies Act 2017 is the proponent of Punjab Rural Sustainable Water Supply and Sanitation Project (PRSWSSP). Details of the Proponent of the proposed Project are provided here under:

Proponent Details	
Name	Project Director Punjab Rural Municipal Services Company (PRMSC) Government of the Punjab
Address	Head Office, 5th Floor, KD Plaza, Opposite Zoom Petrol Pump, MM Alam Road, Lahore, Punjab
Tel	+92 423 5962888

The Environmental and Social Management Plan (ESMP) of subproject “Consultancy Services for Engineering Design and Construction Supervision of Punjab Rural Sustainable Water Supply & Sanitation Project (PRSWSS) Cluster: North is carried out by **Techno Consult International Pvt. Ltd.** Details are as under:

Consultant Details	
Name	Techno Consult International Pvt. Ltd.
Address	TECHNO-HOUSE, 37-K Block-6, P.E.C.H.S, Karachi 76400, Pakistan
Tel	(+92-21) 3453-0630/31-32
Website	www.techno-consult.com

1.6 Approach & Methodology to Work

1.6.1 Approach

The study has been conducted in accordance World Bank Safeguards policies (OP 4.01, OP 4.12, OP 4.20 & BP 17.50) applicable to this project. Further, Punjab Environmental Protection Agency (PEPA) guidelines were also considered in preparation of this document. The study is based on both primary and secondary data and information. The primary data includes data collected from field i.e., information about existing conditions; environmental sampling and analyses for air, water and noise; environmental sensitive receptors, ecological survey; social survey including demographic characteristics, income dependency & quality of life, occupation, and social amenities etc. The secondary data includes a review of relevant information from literature and previous reports. Discussions were held with stakeholders including government officials, community representatives and a wide range of local communities. The main purpose of this approach was to obtain an impartial impression of the people's perceptions of the project and its environmental and social impacts.

The assessment remains subject to change with respect to the finalization of technical specifications and alignment of the proposed sewer, water supply lines & location of overhead tanks, pumping station, and STP.

1.6.2 Methodology

The following methodology was adopted to develop the ESMP of the proposed Project:

A. Orientation

Meetings and discussions were held among the members of the ESMP Consulting Team. This activity is aimed at achieving a common ground of understanding various issues of the Study.

B. Data Collection Planning

Subsequent to the concept clarification and understanding obtained in the preceding step, a detailed data acquisition plan was developed for the internal use of the ESMP Consulting Team. The plan included; identification of specific data requirements and their sources; determination of time schedules and responsibilities for their collection and the indication of the logistics and other supporting needs for the execution of the data acquisition plan. Field surveys were then conducted based on the data collection plan.

C. Detailed Field Survey

Detailed site visits for the collection of data were conducted. The data collected from the field include:

- Identification of environmentally sensitive receptors including air-sensitive receivers, noise-sensitive receivers, and water bodies expected to receive pollutant load;
- Sampling and analysis for air, noise wastewater, and groundwater;

- Ecological survey;
- Socioeconomic survey including public consultation;
- Stakeholders' consultations.

D. Sampling & Analysis of Physical Environmental Parameters

M/s Pak Green Services Laboratory (EPA Certified Laboratory) was hired for environmental monitoring. The Laboratory was mobilized for collection of water and wastewater samples as well as air and noise monitoring.

E. Review of Secondary Data

Previous environmental and social soundness assessment for Isa Khel and other published and unpublished information was collected in order to gain a complete understanding of existing environmental conditions of the area including:

- **Physical environment:** topography, geology, soils, surface and groundwater resources, and climate;
- **Biological environment:** flora and fauna (particularly rare or endangered species), critical habitats/zones, and vegetation communities within the project area;
- **Socio-economic environment:** settlements, socio-economic conditions, infrastructure, and land use.
- **Heritage aspects:** sites of cultural, archaeological, or historical significance.

F. Review of Environmental and Social Laws and Institutional Requirements

The project needs to comply with all the applicable national and provincial environmental and social policies, laws, guidelines, acts, and legislations and World Bank's Operational Policies (OPs) requirements. All these requirements and policies were reviewed.

G. Area of influence (Aol)

The area of influence is the area likely to be affected by the project, including all its ancillary aspects. The Aol includes the areas where positive and adverse impacts may be foreseen due to the execution of the proposed project.

A team of environmental and social experts, including environmental engineers, sociologists, ecologists, gender specialists & enumerators etc., carried out the environmental and social survey of the Aol to familiarize themselves with the local conditions and the environmental settings. During the survey, information regarding the topography, soil, rock, surface water, groundwater, flora and fauna, forested areas, and social settings along the Aol was collected.

H. Environmental and Social Baseline Survey of the Project

An environmental and social survey was carried out within the Aol to establish the baseline of the project area. Prior to the start of field activities, comprehensive checklists, proformas, and maps were developed to gather the following information:

(i) Physical Environment

The following information was acquired for the establishment of the physical environment baseline:

- Topography;
- Water resources (including available surface and groundwater resources and natural streams, hydrology, water supply, water contamination etc.);
- Climate data (including temperature, precipitation, humidity, wind speed, direction etc.);
- Water, surface water, ambient air quality and noise level monitoring data;
- Existing water supply and sewerage systems;
- Seismology;
- Land resources (including land use pattern, soil & geology); and
- Environmental Sensitive Receptors.

(ii) Ecological Environment

- Flora (trees, herbs, shrubs, grasses, and overall vegetation including valuable or rare trees and their loss due to implementation of the Project, etc.);
- Fauna/ Wildlife (Mammals, reptiles, amphibians, and avifauna.);
- Agriculture and livestock;
- Reserved forests, Guzara forests, Community forests/ Private forests, and wildlife sensitive or notified areas in Aol;
- Migratory birds' corridors; and
- Endangered species (both flora and fauna).

(iii) Socio-Economic Environment

A sample survey was carried out within the Aol in order to develop the socio-economic baseline information of the general settled population. Several socio-economic parameters were covered in the socio-economic baseline survey of the sample population settled along the Aol in the light of primary and secondary data. These aspects include but are not limited to the following:

- Demographic characteristics;
- Literacy status/ education;
- Nature of business/occupation;
- Livelihood/income;
- Living standard of the population;
- Social Infrastructure available;
- Gender issues;
- Housing construction patterns;
- Mode of transport;

- Basic amenities of the project area;
- Health facilities/ Educational facilities.; and
- Other aspects.

I. Stakeholder Consultations

For the current study, stakeholder consultations were carried out through following techniques:

- Formal/ informal meetings;
- Individual interviews;
- Group Discussions; and
- Scoping Sessions

The study team met with the government functionaries, affected persons and local communities in and around the project area. The objective of the consultation was to disseminate information on the project and its expected impact, long-term as well as short-term, among primary and secondary stakeholders and to gather information on relevant issues so that the feedback received could be used to address these issues at an early stage.

J. Impact Assessment and Mitigation Measures

A logical and systematic approach was adopted for impact identification and assessment. The process began during the screening and continued through scoping which identified the key issues and classified them into different categories. The tools were used for impact assessment, through Checklists (Environmental and social screening) for both the construction and operational phase.

Identification of potential environmental and social impacts in terms of their nature, magnitude, extent, location, timing, and duration was carried out. The impacts were correlated to the Project location, design stage, construction as well as operation stage. Based on the impacts prediction methods and as a result of public/stakeholder consultations, ESMP team screened the adverse environmental and social impacts for inclusion in the mitigation measures and environmental and social management plan. Stakeholder consultations (which provided feedback on the impacts from the stakeholder's viewpoint) were used to screen out the insignificant impacts.

ESMP team proposed practicable, economically feasible and socially acceptable mitigation measures for the significant adverse environmental and social impacts. These measures were based on exploring the ways to achieve the project objectives by causing the least disturbance to the existing environment by alternative ways, proposing changes in the Project design, through improved monitoring and management practices (storage of construction materials, labor camps, waste disposal, disposal of construction debris, etc. or through monetary compensation).

K. Environmental and Social Management Plan

The data collected from the field was analyzed and the impacts of the proposed project on the physical, biological and socio-economic environment prevalent in the project area were identified and characterized with respect to significance and probability of occurrence at the design, construction, operation, and decommissioning phases. Possible mitigation measures and implementation mechanisms are proposed so that the impacts can be mitigated/controlled and the project implementation remains sustainable.

1.7 Structure of Report

The structure of this report is listed below:

Section 1: Introduction briefly presents the project background, objectives, methodology and need of the study.

Section 2: Legal and Administrative Framework Lists national as well as provincial laws, regulations and procedures and applicable World Bank Operational Policies (OPs).

Section 3: Project Description provides an overall description of the project including proposed networks, design considerations and concepts, manpower requirement, waste generation, machinery and material requirements.

Section 4: Baseline Profile gives a description of baseline physical, biological and socio-economic conditions of the project area.

Section 5: Public Consultation and Information Disclosure identify the main stakeholders and their concerns raised during scoping sessions and deal with the measures to mitigate the social impacts.

Section 6: Potential Environmental and Social Impacts and their Mitigations Measures identify, predict, and evaluate the impacts of the project activities during the construction and operation stages and deal with the measures proposed to mitigate potential environmental impacts of the proposed project.

Section 7: Environmental and Social Management Plan This section outlines the organizational framework, mitigation, and monitoring plans, and training requirements, defines roles and responsibilities and estimates budget requirements for satisfactory implementation.

2 LEGAL AND ADMINISTRATION FRAMEWORK

2.1 General

This section deals with the current environmental policy as well as legal and administrative framework required to develop Environmental & Social Management Plan (ESMP) for the proposed interventions in selected villages of Tehsil Isa Khel. All relevant provisions of environmental policies laid down by the Government of Pakistan, Government of Punjab along with applicable World Bank Policies have been duly discussed and the project proponent will be required to adhere to these regulations throughout the course of the project. The institutional arrangement for compliance to these laws has been described in ESMP (Section 7).

2.2 Summary of Key National Strategies, Policies, Acts and Legislation

The summary of key national strategies, policies, acts and legislation from environmental perspective are briefly described in **Table 2.1** below:

Table 2. 1: Key National strategies / policies, legislation / Acts, Laws and Regulations and Their Relevance to the Project

Sr. No.	Policy/Strategy	Brief Coverage	Relevance to project
1	Fatal Accidents Act 1855	An act to provide compensation to family's loss occasioned by the death of a person caused by actionable wrong. It is enacted as follows: - Suit for compensation to the family of a person for loss occasioned to it by his death by actionable wrong - Not more than one suit to be brought - Plaintiff shall deliver particulars etc. - Interpretation clause	The provisions of this act would be applicable if any fatal accident occurs during the execution of construction works for the proposed Project.
2	Pakistan Penal Code 1860	It authorizes fines, imprisonment or both for voluntary corruption or fouling of public springs or reservoirs so as to make them less fit for ordinary use.	The provisions of the Penal Code, 1860 are applicable to the project in terms of penalties for effecting human lives and public property. It also addresses the control of noise, air emissions, and effluent disposal.
3	Land Acquisition Act, 1894 (Including Later Amendments)	The Land Acquisition Act, 1894, is a "law for the acquisition of land needed for public purposes and for companies and for determining the amount of compensation to be paid on account of such acquisition". The exercise of the power of acquisition has been limited to public purposes. The principles laid down for the determination of compensation, as clarified by judicial pronouncements made from time to time, reflect the anxiety of the law-giver to compensate those who have been deprived of property, adequately. The land needed for the construction of development projects will be acquired under normal conditions based on prevailing market prices or negotiated prices between client and the owners of land. Section 17(4) of the LAA will not be used in the absence of an emergency. Instead, the land will be purchased under willing-seller willing-buyer deal at agreed upon	No private land is acquired in this project. However, the state's land will be used for the construction of overhead tanks, pumping stations & STP.

Sr. No.	Policy/Strategy	Brief Coverage	Relevance to project
		market rates and the seller will have the option not to sell the land, in case an acceptable deal for both the parties is not reached	
4	Protection of Trees and Brushwood Act, 1949	The Protection of Trees and Brushwood Act of 1949 prohibits the cutting or lopping of trees along roads and canals planted by the Forest Department unless prior permission of the Forest Department is obtained	This act will be applicable to the proposed project in term of Tree Cutting.
5	Pakistan Antiquities Act 1975	The protection of cultural resources in Pakistan is ensured by the Antiquities Act of 1975. Antiquities have been defined in the Act as ancient products of human activity, historical sites, or sites of anthropological or cultural interest, national monuments etc. The act is designed to protect antiquities from destruction, theft, negligence, unlawful excavation, trade and export. The law prohibits new construction in the proximity of a protected antiquity and empowers the Government of Pakistan to prohibit excavation in any area, which may contain articles of archaeological significance.	The provisions of this act would also be applicable, if any accidental archaeological discoveries may occur during the excavation works for the construction of proposed Project.
6	National Conservation Strategy 1992	Pakistan National Conservation Strategy (NCS), which was approved by the federal cabinet in March 1992, is the principal policy document on environmental issues in the Country. The NCS outlines the Country's primary approach towards encouraging sustainable development, conserving natural resources and improving efficiency in the use and management of resources. The NCS has 68 specific programs in 14 core areas in which policy intervention is considered crucial for the preservation of Pakistan's natural and physical environment.	The core areas that are relevant in the context of the proposed project are pollution prevention during construction, conserving, biodiversity and supporting forestry and plantation.
7	Guidelines for Public Consultation, 1997	The Pakistan Environmental Protection Ordinance 1997 requires public participation during the review of an EIA (Section 12(3)). The "Policy and procedures for the filing, review and approval of environmental assessments" requires proponents to consult with the affected community and relevant NGO's during the preparation of an environmental report. Public involvement is a feature of environmental assessment and can lead to better and more acceptable decision-	These guidelines are applicable for the preparation of the EIA / ESMP.

Sr. No.	Policy/Strategy	Brief Coverage	Relevance to project
		making. The objectives of public involvement include: • informing the stakeholders about what is proposed; • providing an opportunity for those otherwise unrepresented to present their views and values, therefore allowing more sensitive consideration of mitigation measures and tradeoffs	
8	Guidelines for Review and Preparation of Environmental Reports, 1997	These guidelines describe the format and content of IEE/EIA reports to be submitted to Provincial EPA/EPD for obtaining NOC. The guidelines present: • The environmental assessment report format; • Assessing impacts; • Mitigation and impact management and preparing an environmental management plan; • Reporting; • Review and decision making; • Monitoring and auditing; and Project Management.	These guidelines are applicable for the preparation of the EIA / ESMP.
9	National Sanitation Policy, 2006	The National Sanitation Policy of Pakistan, 2006, stresses on the safe disposal of excreta away from the dwellings, creation of an open defecation-free environment and, promotion of health and hygienic practices in the country.	This policy is applicable to the project for the efficient management of solid waste or wastewater during construction or operation phase of the project. This project primarily focused on provision of improve sanitation services in Isa Khel
10	Pakistan Labor laws	The Constitution of Pakistan contains a range of provisions with regards to labor rights, in particular: • Article 11 of the Constitution prohibits all forms of slavery, forced labor and child labor; • Article 17 provides a fundamental right to exercise the freedom of association and the right to form unions; • Article 25 lays down the right to equality before the law and prohibition of discrimination on the grounds of sex alone; and	The labor laws will be relevant as it will deal with employment of labor for the construction of proposed Project. Following are the major labor laws which are applicable to the project: • Bonded Labor System (Abolition) Act, 1992 • Employment of Child Act, 1991

Sr. No.	Policy/Strategy	Brief Coverage	Relevance to project
		- Article 37(e) makes provision for securing just and human conditions of work, ensuring that children and women are not employed in vocations unsuited to their age or sex, and for maternity benefits for women in employment. Labor law is controlled at both provincial and national levels with compulsory employment agreements containing the terms set out by the labor laws. The labor laws are a comprehensive set of laws in Pakistan dealing with the following aspects: - Contract of Employment; - Termination of Contract; - Working Time and Rest Time; - Working hours; - Paid Leave; - Maternity Leave and Maternity Protection; - Other Leave Entitlements; - Minimum Age and Protection of Young Workers; - Equality; - Pay Issues; - Workers' Representation in the Enterprise; - Trade Union and Employers Association Regulation; and - Other Laws.	- Minimum Wages Ordinance, 1961 - Industrial Relations Act, 2010
11	Pakistan Approaches to Total Sanitation, 2010	The PATS contains number of branded total sanitation models, having a key role of communities, which include: - Community Led Total Sanitation - School Led Total Sanitation - Component Sharing - Sanitation Marketing - Disaster Response The above models may be adopted by the provincial and local governments in accordance to what suits best in their local context and in accordance with the reinforcement values of PATS.	The applicable models of PATS will be adopted where it is necessary.

Sr. No.	Policy/Strategy	Brief Coverage	Relevance to project
12	Protection Against Harassment of Women at the Workplace Act, 2010	The Protection Against Harassment of Women at the Workplace Act refers to sexual harassment at the workplace.	This Act will be applicable to the project if women are employed for the construction of the proposed Project or women living in near vicinity of the project area.
13	National Forest Policy, 2015	The goal of this policy is to expansion, protection and sustainable use of national forests, protected areas, natural habitats and watersheds for restoring ecological functions, improving livelihoods and human health in line with the national priorities and international agreements.	This policy is to avoid any disturbance to ecological system near project area due to construction activities.
14	Canal and Drainage Act 1873 and Amendment Act, 2016	The Canal and Drainage Act 1873 (CDA) focuses on construction and maintenance of drainage channels and defines powers to prohibit obstruction or order their removal. It also covers issues related to canal navigation. It briefly addresses issues relating to environmental pollution. Section 70(5) of the CDA clearly states that no one is allowed to "corrupt or foul the water of any canal so as to render it less fit for the purposes for which it is ordinarily used." In addition, Section 73 of the CDA gives power to arrest without warrant or to be taken before the magistrate a person who has wilfully damaged or obstructed the canal or "rendered it less useful."	This act is applicable to the project for the efficient management of wastewater disposal during the construction or operation phase of the project.
15	Panchayats and Neighborhood's Councils Act, 2019	The Panchayats and Neighborhoods Councils Act, 2019 (PVPNCA 2019) was repealed in February 2021 through an amendment to the PLGA 2019. The result was the Punjab Local Government (Amendment) Ordinance 2021 that established a new tier of local government at the village level called Village Councils, which incorporated the main functions of village panchayats prescribed in the PVPNCA 2019 with regard to water, sanitation, and waste management.	This act is applicable to the proposed project, village councils is informed about the project and will remain in contact during the construction or operation phase of the project.
16	National Climate Change Act, 2021	The National Climate Change Policy provides a framework for addressing the issues that Pakistan faces or will face in future due to the changing climate. In view of Pakistan's high vulnerability to the adverse impacts of climate change, in particular extreme events, adaptation effort is the focus of this policy document. The	This policy document is a 'living' document and will be reviewed and updated regularly to address emerging concepts and issues in the ever-evolving science of climate change.

Sr. No.	Policy/Strategy	Brief Coverage	Relevance to project
		vulnerabilities of various sectors to climate change have been highlighted and appropriate adaptation measures spelled out. The policy covers measure to address issues in various sectors such as water, agriculture, forestry, coastal areas, biodiversity and other vulnerable ecosystems. Notwithstanding the fact that Pakistan's contribution to global Greenhouse Gas (GHG) emissions is very small, its role as a responsible member of the global community in combating climate change has been highlighted by giving due importance to mitigation efforts in sectors such as energy, forestry, agriculture and livestock.	

2.3 Key Provincial Strategies / Policies, Legislation / Acts, Laws and Regulations

The provincial policies, strategies, acts and laws relevant for the environmental safeguard of the project activities are given below in **Table 2.2**.

After the 18th amendment to the constitution of Pakistan, many subjects, including environmental protection and pollution prevention, have been devolved to the provincial jurisdiction. Therefore, the apex environmental statute governing the proposed project will be the Punjab Environmental Protection Act 1997. However, detailed rules, regulations and guidelines required for the implementation of the policies and enforcement of legislation are still in various stages of formulation and discussion. The following description presents a brief overview of the relevance of various existing provincial policies, legislation and guidelines.

Table 2.2: Key Provincial strategies / policies, legislation / Acts, Laws and Regulations and Their Relevance to the Project

Sr. No.	Strategies / Policies / Legislations / Acts / Laws & Regulations	Brief Coverage	Relevance to project
1	Punjab Land Revenue Act, 1967	The Land (Punjab) Revenue Act, 1967 was enacted on 7 December, 1967 and then was amended for the province of Punjab to consolidate and amend the laws related to the land revenue in Punjab. It expedites the consolidation and maintenance of the record of rights, assessment and collection of land revenue, appointment of land officers and all the matters relating and arising in connection with the administration of land revenue.	The provisions of this act would be applicable during the implementation of the proposed project.
2	Punjab Plantation and Maintenance of Trees Act, 1974	The Punjab Plantation and Maintenance of Trees Act, (1974) regulates tree plantations and enforces measures for their protection. The requirements of this act are applicable in terms of planting new trees and their maintenance by the occupier of the proposed Project land who would have the physical possession.	This act would be implemented if any tree cutting activity involved during construction.
3	The Punjab Wildlife (Protection, reservation, Conservation & Management) Act, 1974	This act provides for the protection, preservation, conservation and management of wildlife in the Province of Punjab. This act defines the wildlife sanctuary, game reserves, protected areas, and national parks. It also defines the rules and responsibilities of the relevant authorities and the relevant personnel to protect ecological resources. It also describes the penalties and punishments on offenses against the sections given in the act.	This policy is to avoid any disturbance to ecological system near project area due to construction activities.
4	Punjab Land Acquisition Rules, 1983	This Law provides for the acquisition of land needed for public purposes and for Companies, and determines the amount of compensation to be made on account of such acquisition. The Collector of the District may make a preliminary investigation on any land in any locality that may be needed for any public purpose or for a Company. The Commissioner, for land acquired for a public purpose, or the Provincial Government for land acquired for a Company, when satisfied of the result of the investigation, shall publish a notification in the Official Gazette. Following this, a declaration of intended acquisition shall be published, and shall state the district or other territorial division in which the land is situate, the purpose for which it is needed, its approximate area, and, where a plan shall have been made of the land, the place where such plan may be inspected (Part II). The amount of	The provisions of this act would be applicable during the execution of the proposed project.

Sr. No.	Strategies / Policies / Legislations / Acts / Laws & Regulations	Brief Coverage	Relevance to project
		compensation shall then be settled, and if any dispute arises the Collector may refer such dispute to the decision of the Court (Part IV and V). Part VI deals with procedures for the temporary occupation and use of any waste or arable land needed for any public purpose or for a Company. The acquisition of land for companies is provided for in Part VII. Part VIII contains provisions of miscellaneous nature.	
5	The Motor Vehicles Rules, 2000	Motor Vehicle Rules 1969 (MVR 1969) define powers and responsibilities of Motor Vehicle Examiners (MVEs). The establishment of MVE inspection system is one of the regulatory measures that can be taken to tackle the ambient air quality problems associated with the vehicular emissions during operation phase	During Construction all these rules will be followed to avoid emission of air pollutant.
6	Punjab Forest Act (Amended), 2010	The Forest Act of 1927 amended 2010, establishes the right of GoP to designate areas of reserved forest, village forest and protected forest. GoP is enabled to acquire such areas in order to prohibit or restrict the public use of such resources or other activities within them. The proposed project is semi-urban in nature and no protected forest is situated in and around the Project area.	During construction there will be no clearing of any forest for cultivation in this site. Incase If any site observed permission will be seek prior construction activities.
7	Punjab Approaches to Total Sanitation, 2010	The PATS contains number of branded total sanitation models, having a key role of communities, which include: • Community Led Total Sanitation • School Led Total Sanitation • Component Sharing • Sanitation Marketing • Disaster Response The above models may be adopted by the provincial and local governments in accordance to what suits best in their local context and in accordance with the reinforcement values of PATS.	The applicable models of PATS will be adopted where it is necessary.
8	Guidelines and Checklists adopted by Government of Punjab	Post the adoption of the 18th Constitutional Amendment in 2011, the subject of environment was devolved and the provinces have been empowered for environmental protection and conservation. The Punjab Environmental	All projects to be implemented in Punjab must comply with PEQS during all the phases i.e., construction

Sr. No.	Strategies / Policies / Legislations / Acts / Laws & Regulations	Brief Coverage	Relevance to project
	after 18 th Amendment	Protection Act, 1997 (as Amended upto 2022) is comprehensive legislation and provides the legislative framework for protection, conservation, rehabilitation and improvement of the environment. The „environment“ has been defined in the Act as: (a) air, water and land; (b) all layers of the atmosphere; (c) all organic and inorganic matter and living organisms; (d) the ecosystem and ecological relationships; (e) buildings, structures, roads, facilities and works; (f) all social and economic conditions affecting community life; and (g) the interrelationships between any of the factors specified in sub-clauses „a“ to „f“.	and operation. No Objection Certificate (NOC) shall be required from Punjab Environmental Protection Agency (PEPA) before commencement of construction.
9	Punjab Drinking Water Policy 2011	The overall objective of Punjab's Water Policy is to provide clear policy directions to the Government of Punjab on the sustainable management and development of water from all sources of water (surface water, groundwater and rainwater), for all sub-sectors of water use (domestic, stock water, agriculture, industry).	This policy is applicable and drinking water supply will be designed according to PDWP policy guidelines.
10	Punjab Environmental Tribunal Rules, 2012	According to Section-31 of the Punjab Environmental Protection Act, 1997 (XXXIV of 1997), the Tribunal shall make every effort to dispose of a complaint or an appeal or other proceedings regarding environmental problems associated with the construction and development of any project within sixty days from the date of filing of the complaint, appeal or other proceedings but any decision of the Tribunal shall not be rendered invalid by reason of any delay in the disposal of complaint, appeal or other proceedings.	This is applicable to dispose of a complaint or an appeal or other proceedings regarding environmental problems associated with the construction and development of any project within sixty days from the date of filing of the complaint, appeal or other proceedings.
11	Punjab Antiquities Amendment Act, 2012	The Punjab Antiquities Amendment Act, 2012 is adopted from the Pakistan Antiquities Act of 1975 with a few minor changes. The law will be applicable to the proposed project mainly due to its provision that „any construction activity within 61 meter or 200 ft. of protected antiquities, are prohibited“. The provisions of this act would also be applicable, if any accidental archaeological discoveries may occur during the excavation works for the	The provisions of this act would be applicable, if any accidental archaeological discoveries may occur during the excavation works for the construction of proposed Project.

Sr. No.	Strategies / Policies / Legislations / Acts / Laws & Regulations	Brief Coverage	Relevance to project
		construction of proposed Project.	
12	Punjab Local Government Musalihat Anjuman (Constitution and Functions) Rules, 2016	The dispute may be brought to the Musalihat Anjuman. The Musaliheen shall make every reasonable effort in encouraging and assisting the parties in arriving at an amicable settlement but for this purpose shall not impose, coerce or try to dictate terms for any specific resolution of the dispute.	The provisions of this rule would be applicable, if any dispute occur during the execution of proposed Project.
13	Punjab Environmental Quality Standards (PEQS), 2016	In exercise of the powers conferred under clause (c) of sub-section (1) of section 4 of the Punjab Environmental Protection Act, 1997 (XXXIV of 1997), the Environmental Protection Council has approved the Punjab Environmental Quality Standards (PEQS), 2016. They endow information on the permissible limits for discharges of municipal and industrial effluent parameters and industrial gaseous emissions in order to regulate environmental pollution. Results of environmental monitoring (ambient air, water and noise) conceded out at different locations in study area are compared with PEQS values and are conversed in later chapter of the report.	These standards are applicable in compliance with all the Punjab Environmental Quality standards of different Environmental Parameters during Construction and operational phase.
14	The Punjab Flood Plain Regulation Act, 2016	This act regulates construction in the flood plains in the Punjab. According to this act, no construction can be carried out in flood plains without prior approval in writing from canal officer.	Construction work will be carried out in underground for installing of water supply lines and sewerage lines.
15	Punjab Restriction on Employment of Children Act, 2016	According to the sub-section 11(a) of this act, an occupier who employs or permits a child (person under the age of 15 years) to work in an establishment shall be liable to punishment with imprisonment for a term which may extend to six months, but which shall not be less than seven days, and a mandatory fine between 10,000 and 50,000 rupees. This act will trigger if contract higher skilled and unskilled labor under age 15.	The relevance of this act to the project will be to prohibit child employment for construction of the proposed project
16	Punjab Protection of Women against Violence Act, 2016	This act counters gender-based discrimination, violence against women, and economic and social empowerment of women. This act will entail if gender-based violence observed in the project area during construction phase.	This Act will be applicable to the project if women are employed for the construction of the proposed Project or women living in near vicinity of the project area.

Sr. No.	Strategies / Policies / Legislations / Acts / Laws & Regulations	Brief Coverage	Relevance to project
17	Punjab Tehsil / Town municipal Administration (Works) rules, 2003 (amendments, 2016)	According to Chapter VIII-A Occupational Safety & Hazard 50 A Workplace Safety: - - the Contractor shall ensure that: - any hazard at the place of work, during the execution of work, shall not cause any loss of life. - The work shall not loss to the property of any other person; - Before commencing the work, all the safety equipment is in place and safety measures have been taken as necessarily required at the place of work; - All necessary safety requirements are strictly adhere to at the place of work; and - Protective safety equipment for workers, as specified by the local government engineer, are functional and in working order. 50 B the Local Government Engineer shall ensure that: - All the safety measures, during the operation and maintenance of existing infrastructure, according to the nature of work, have been adopted to secure life and property; and - All precautionary measures and use of sewer safety - equipment specified in Schedule have been taken in respect of; - Sanitation functions; or Cleanliness of sewer, manholes and descending sanitary workers in the sewer manholes.	All the mentioned clauses will be applicable on construction labor/workers/ and sewer men/sanitary workers during execution of subprojects.
18	Punjab Environmental Protection Act 1997 (Amended 202)	The Punjab Environmental Protection Act, 1997 (Amended, 2012 & 2017) is comprehensive legislation and provides the legislative framework for protection, conservation, rehabilitation and improvement of the environment. The 'environment' has been defined in the Act as: (a) air, water and land; (b) all layers of the atmosphere; (c) all organic and inorganic matter and living organisms; (d) the ecosystem and ecological relationships; (e) buildings, structures, roads, facilities and works; (f) all social and economic conditions affecting community life; and (g) the	All projects to be implemented in Punjab must comply with PEQS during all the phases i.e., construction and operation. No Objection Certificate (NOC) shall be required from Punjab Environmental Protection Agency (PEPA) before commencement of

Sr. No.	Strategies / Policies / Legislations / Acts / Laws & Regulations	Brief Coverage	Relevance to project
		interrelationships between any of the factors specified in sub-clauses 'a' to 'f'. The notable points of the law are: • No proponent of a project shall commence construction or operation unless he has filed an IEE/EIA with the Provincial Agency designated by the Provincial EPAs an EIA, and has obtained an approval; • Establishment and formation of the Punjab Environmental Protection Council (PEPC); • Prohibition of certain discharges or emissions; • Punjab Environmental Quality Standards (PEQS) for wastewater, air emissions and noise; and • Provincial Government can issue notices and enforce them to protect the environment. In the recent amendment of 2012, legislatures powers related to environment and ecology are given to provincial governments from the Federal government. The provinces are required to enact their own legislation for environmental protection. Other amendments include increasing the penalties for violations. For the proposed Project, Environmental Protection Department (EPD)/Environmental Protection Agency (EPA), Government of the Punjab (GoPb) is the concerned authority. The capability of regulatory institutions for environmental management is ultimately responsible for the success of environmental assessments and that development projects are environmentally sound and sustainable. The provision of the act is applicable to proposed Project for conducting an EIA according to section 12 and to obtain environmental approval from the EPA. The section 11 of the act is applicable in term of compliance with Punjab Environmental Quality Standards (PEQS). Similarly, section 13 of the act prohibits the import of hazardous waste. The provisions of section 16 are also applicable to comply with the discharge or emission of any effluent,	construction.

Sr. No.	Strategies / Policies / Legislations / Acts / Laws & Regulations	Brief Coverage	Relevance to project
		waste, air pollutant or noise or disposal of waste or handling of hazardous substance. Under section 17, penalties will apply if anyone fails to comply with the provisions of section 11, 12, 13 and 16.	
19	Punjab Policy on Controlling Smog, 2017	The Punjab Environmental Protection Department issued this policy on controlling smog in 2017. It imposed a complete ban on open burning of rice stubble, solid waste and other hazardous materials. It focuses the reasons behind the formation of dense smog in the Punjab, especially in Lahore and its environs, on the onset of winters each year and provide a short and medium to long term plan, including measure for protection of school going children; minimizing road accidents and creating mass awareness on precautionary measures for citizens at large.	During construction and operational phases all PEQS will be followed in accordance with to compliance and to minimize pollution load to control smog.
20	Punjab Labor Policy, 2018	This Policy deals with labor standards, social dialogue, improvements in workplace safety, living wages, child/ bonded labor, awareness raising, excellence in labor inspections regime, imparting quality technical trainings through well-improved Training Centers, simplification of labor laws, medical facilities for secured workers even after retirement, establishment of labor colonies and schools for workers' children, efficient disbursement of welfare grants and gradual extension of labor protection frame-work	The labor policy will be relevant as it will deal with the protection of labor.
21	Punjab Growth Strategy 2018	The document endorses Punjab's health sector vision and strategy, which emphasizes improvement of water, sanitation and hygiene services to prevent communicable diseases.	This strategy will be adopted in design of proposed project.
22	Punjab Occupational Safety and Health Act, 2019	This Act covers occupational safety and health of the persons at workplace and to protect them against risks arising out of the occupational hazards; to promote safe and healthy working environment catering to the physiological and psychological needs of the employees at workplace and to provide for matters connected therewith or ancillary thereto.	This act will be applicable to the proposed project in term of the health and safety during the construction and operational phases of the project.
23	Punjab Water Act 2019	An Act to comprehensively manage and regulate water resources in the Punjab in the interest of conservation and sustainability. It is expedient to provide for comprehensive management of all water resources in the Punjab and to regulate their use in the interest of conservation and sustainability and	This act will be applicable to the proposed project. The drinking water supply will be designed in light of PWA, 2019.

Sr. No.	Strategies / Policies / Legislations / Acts / Laws & Regulations	Brief Coverage	Relevance to project
		matters connected with and ancillary thereto.	
24	Punjab Local Government Act 2022	It is expedient to reconstitute the local governments and consolidate laws relating to powers and functions of local governments for establishing an effective elected local government system for meaningful devolution of political, administrative and financial responsibility and authority to the directly elected representatives of the local governments as envisaged under Article 140A of the Constitution to promote good governance, effective delivery of services and transparent decision making through institutionalized participation of the people at local level; and to deal with ancillary matters.	All project activities to be implemented must comply with Punjab Local Government Act during all the phases i.e., construction and operation.

2.4 Applicable World Bank Policies

2.4.1 World Bank Operational Policies

Policy	Triggered/Not Triggered	Applicability
OP 4.01 - Environmental Assessment	Yes	<i>This OP is triggered</i> because the project will support, among others, the “development of infrastructure for water supply and sanitation” involving physical construction activities that may have some negative impacts on environment like soil and water contamination. For all those sub-projects having negative impacts on environment will be categorized as E2 and as per compliance of OP 4.01, an ESMP will be prepared to mitigate the anticipated impacts
OP 4.04 Natural Habitat	No	This policy is not triggered as project interventions are not planned in natural habitats at this point.
OP 4.36 Forests	No	This policy is not triggered in case of PRSWSSP subprojects because the hard component will not be relevant to any reserved forest protected under Forest Department, Government of Punjab.
OP 4.09 Pest Management	No	The project interventions do not use any pesticides and hence this policy is not triggered
OP 4.12 Involuntary Resettlement	Yes	Only small parcel of land may be required for project interventions. Anyhow, OP 4.12 will be triggered as in some project interventions land may need to be acquired (e.g., for water filtration plants, holding and overhead tanks, basic filtration unit, drainage and disposal). Certain interventions may also involve minor temporary impacts on livelihoods (due to restricted access during construction; temporary displacement of vendors/hawkers etc.) which could require small scale compensation. A Resettlement Policy Framework (RPF) has been prepared for such interventions. Anyhow, land acquisition and resettlement will be avoided and if required, land needs will be met through Voluntary Land Donation (VLD) and usage of Government owned land. The procedure for VLD with clear guidance on implementation; process for ensuring voluntariness; and, criteria for accepting donations to ensure that nobody is worse off after donating lands will be provided in the RPF. The VLD process will be monitored closely at the local level to ensure that there is no coercion for donations and that community members do not become worse off or lose their livelihood due to the donation

OP 4.10 Indigenous Peoples	No	No indigenous people as defined in the Policy are known to exist in the area. Hence OP 4.10 is not triggered.
OP 4.11 Physical Cultural Resources	No	The project activities are at small scale and household level and hence will not involve large excavation and are not expected to impact the cultural resources. However, chance find procedures are included in the EIA and guidance will be given to ensure they are also included in EIA as matter of precaution while E&S Screening Checklist will be used to identify PCRs at screening stage.
OP 4.11 Safety of Dams	No	The project does not involve any dam related activity; therefore, this policy is not triggered.
OP 4.20 – Gender and Development	Yes	This policy will be triggered as the project will assist to reduce poverty and enhance economic growth, human well-being, and development effectiveness by addressing the gender disparities and inequalities that are barriers to development
OP 7.60 - Projects in Disputed Areas	No	The project is not located in any disputed area and all interventions are planned in Punjab province, so this policy is not triggered.
OP 7.50 - Projects on International Waterways	Yes	This policy will be triggered. The Project has got the PAD cleared from Legal department. An exemption for notification has been approved by the SAR VP.
BP 17.50 – Access to Information	Yes	The BP 17.50 sets out the World Bank policy on disclosure of information. It is a mandatory procedure to be followed by the borrower and Bank and supports public access to information on environmental and social aspects of projects. Consultations with various stakeholders including affected communities were carried out during EIA study. Environmental Safeguard documents including ESMP, ESMF and EIA will be disclosed on PRMSC and World Bank website and through public consultations at project site. The executive summary will be translated into Urdu and will be disclosed at PRMSC website and will be made available to the local communities.

Although the latest Environmental and Social Framework replaces several Operational Policies (Ops) and Bank Procedures (BPs), however, OPs and BPs will be referred in the current safeguard studies for guidance. The World Bank operational policies applicable to the project and its compliance mechanism, are summarized in the description below:

2.5 Managing the Risks of Adverse Impacts on Communities from Temporary Project Induced Labor Influx

This guidance note provides guidance on identifying, assessing and managing the risks of adverse social and environmental impacts that are associated with the temporary influx of labor resulting from Bank supported projects. The guidance note contains guiding principles and recommendations to be considered as part of the design and implementation of projects with civil works that require labor from outside the project's area of influence.

2.6 Environmental, Health & Safety Guidelines

In addition to operational policies (OP), the WBG has also established its EHS guidelines for all the interventions that are financed by the group. These EHS Guidelines are technical reference documents with general and sector-specific examples of Good International Industry Practice (GIIP). Following EHS guidelines are relevant to the proposed project during the construction and operation phase:

General EHS Guidelines: Issues associated with the construction and operation of maintenance facilities are addressed in the General EHS Guidelines with other key element like Environment and OHS at workplace as well as for community.

EHS Guidelines for Construction Materials Extraction: Issues associated with sourcing of construction materials are presented in the EHS Guidelines for Construction Materials Extraction.

2.7 International Protocol/Conventions

As Pakistan is a member of a number of international organizations such as United Nations Organization (UNO), Organization of the Islamic Conference (OIC), South Asian Association for Regional Cooperation (SAARC), Economic Cooperation Organization (ECO) etc., so it has to follow the international protocols and obligations related to the environment. The major protocols, ratification dates by Pakistan and obligations related to the proposed project are provided in the **Table 2.3** below.

Table 2.3: International Agreements/Conventions Relevant to the Project

Sr. No	Agreement/ Convention	Ratification	Description/Relevance
1.	UNESCO Convention on the Protection of the World's Cultural and Natural Heritage, 1972 Web Link: http://whc.unesco.org/en/%20convention%20text/	Pakistan ratified this convention on 23 July 1976.	Convention concerning the Protection of the World Cultural and Natural Heritage - requires parties to adopt a general policy on the protection of the natural and cultural heritage, to set up services for such protection, to develop scientific and technical studies, to take appropriate legal, technical, scientific and administrative measures and to foster training and education for such protection. The proposed project design and ESS team paid due attention to archaeological sites and local norms. Both of these factors will also be considered during project implementation.
2.	Convention on Conservation of Migratory Species of Wild Animals, 1979 https://www.cms.int/	Pakistan signed this convention in 1981 and ratified it in December 1987.	The Convention on the Conservation of Migratory Species 3 of Wild Animals also known as CMS or Bonn Convention, aims to conserve terrestrial, aquatic and avian migratory species throughout their range. It is an intergovernmental treaty, concluded under the aegis of the United Nation Environment Program concerned with the conservation of wildlife and habitat on global scale. Since the convention's entry into force in 1983, its membership has grown to include 199 parties. Pakistan became member of the Convention during September 1987. Species covered in the Convention should be given special attention during EA and monitoring and any impacts identified should be mitigated to acceptable levels.
3.	The Rio Declaration, 1992 Web Link: http://www.unesco.org/education/pdf/RIO_E.PDF	Pakistan signed the treaty on 13Jun 1992 and ratified on 1 June 1994	The Rio Declaration comprises 27 principles which address important issues such as; sustainable development to integrate environmental protection into the development process; common but differentiated responsibilities to

Sr. No	Agreement/ Convention	Ratification	Description/Relevance
			conserve, protect and restore the earth's ecosystems; public participation and information access at the national level, reduce and eliminate unsustainable patterns of production and consumption.
4.	Convention on Biological Diversity, 1994 Web Link: https://www.cbd.int/	Pakistan signed this treaty in 1992 and it was ratified by cabinet in 1994.	The Convention on Biological Diversity (CBD) known informally as the Convention, is an international legal binding treaty. The Convention has three main goals: a. Conservation of biological diversity, b. Sustainable use of its component, and c. Fair and equitable sharing of benefits arising from genetic resources. The CBD objective is to develop national strategies for conservation and sustainable development. Pakistan ratified the Convention during July 1994 and become part of the treaty with national responsibility to abide by its obligations. Its overall objective is to encourage actions that will lead to a sustainable future

2.8 Institution Responsible for Planning, Policies and Regulations

The institutional setting in Punjab has traditionally comprised various agencies at federal, provincial and LG levels with separate land areas, separate legal and administrative frameworks, and engaging in little institutional coordination.

2.8.1 Environmental Protection Agency, Punjab

Implementation of Punjab Environmental Protection Act 1997 (Amended 2012, 2017 & 2022) is the mandate of the Punjab-EPA. Punjab-EPA is headed by a Director General, and sections are headed by Directors, i.e., Director Technical, Director Administration and Finance, and Director Laboratory. Punjab-EPA has established District Environment Offices at district level.

As the proposed Project falls in Tehsil Isa Khel of District Mianwali, therefore, Punjab-EPA will be responsible for reviewing the report, issuing environmental approval and overall monitoring of the proposed project activities.

3 PROJECT DESCRIPTION

The proposed subproject encompasses villages of Tehsil Isa Khel in District Mianwali. These villages have been selected on priority basis in North cluster as per the request of the Client and World Bank (WB).

3.1 Need and Purpose of Project

The villages in the project area are facing grave issues related to water supply and sewerage. The underlying issues related to water supply and sewerage in the all villages are summarized below:

Water Supply Issues:

- Groundwater is brackish and not consumable
- No water distribution system in most of the villages.
- Existing water distribution system works for only a couple of hours every day and does not cover the whole village.
- Old and worn-out water supply pipes have leakages causing drop in pressures.
- People in most of the priority villages are facing issues like hepatitis, kidney stones and joint pains.

Sewerage Issues:

- Sewerage system does not exist in Priority Villages
- Existing sewer pipes are damaged and collect sewage only from a few houses.
- No proper Disposal Point in all the villages.
- Open sewage ponds, a breeding ground for diseases.

Solid Waste Issues:

- No solid waste management exists. Solid waste is dumped on roads and open plots. Excess solid waste is burnt causing pollution.

3.2 Project Administrative Jurisdiction

The proposed project falls under the jurisdiction of Deputy Commissioners Khushab, Punjab province.

3.3 Project Implementation Schedule

The project is scheduled to be completed in 12 months.

3.4 Construction Activities and Required Machinery

Construction activities involve following:

- Earth work
- Structure/ Concrete works
- Pipe laying

The list of the machinery and the equipment required but not limited to for the proposed project is given below:

Table 3-1: • List of Machinery and Equipment

1. Dump Truck	2. Self-Propelled Pneumatic Roller
3. Front End Loader	4. Asphalt Distributor
5. Dozer	6. Batching Plant/Crusher
7. Grader	8. Concrete Transit Truck
9. Vibratory Roller	10. Concrete Pump
11. Water Tankers	12. Excavator
13. . Spreader	14. Water Pumps
15. Three Wheel Rollers	16. Cranes
17. Tandem Roller	18. Vibrators
19. Asphalt Plant	20. Generators

3.5 Construction Camps

Camp sites will be selected keeping in view the availability of adequate area for establishing camp sites, including parking areas for machinery, stores and workshops, access to local markets, and an appropriate distance from sensitive areas in the vicinity.

The area requirement for construction camps will depend upon the deployed manpower and the type and quantity of machinery mobilized. Approximately 75% of the workforce will be from the sub-project area while some 25% of labor (skilled) would be hired from outside the sub-project area.

Final locations will be selected by the contractor with the assistance of Supervision Consultant. Care will be taken to safeguard the existing environment of the area and location shall be selected away from settlements. The contractors may acquire land on lease from private landowners.

4 Baseline Profile

4.1 General

This section covenants with the prevailing environmental conditions of the project area. Information that has been collected from different sources, including public literature, reports of other studies conducted in this area, knowledge with concerned government departments and the first-hand surveys and field measurements has been presented in this section. This chapter encompasses all the important aspects of local environment; such as biological resources, socioeconomic development and quality of living values.

A Social survey in the Project Area was also carried out through consultation with the various communities. Local residents living in the Project Area were interviewed to obtain their feedback regarding Project and its impacts on their daily life/future in the short and long term.

4.2 Purpose of the Baseline Study

For any development project, the prevailing environmental conditions need to be assessed prior to the stages of planning, designing and execution of the project. Identification of physical, ecological and social aspects of environment and collection of relevant data is essentially important for the evaluation of impacts as well as for the suggestion of adequate mitigation measures, which forms the basis for the implementation of the proposed project in terms of prevailing environmental and social conditions in the study area. The baseline description is intended to accomplish the following objectives:

- To deliver proponent of the project with adequate knowledge about socio-economic set-up, physical environment aspects, social aspects, ecological features, built-up structures and infrastructure of the project area; and
- To allow the planners to assess the potential efficacy of the actions to alleviate the adverse impacts and improve benefits.

4.3 Delineation of Study Area/ Area of Influence (Aol)

As per the environmental screening study conducted earlier, the project falls in “Category E2” which means that the impacts of the project activities are limited and within the boundary of project area. Therefore, the whole village has been considered Area of Influence (Aol).

As per the national and provincial regulations along with the requirements of World Bank’s OP’s, impacts and risks have been analyzed within the project Aol. Environmental and social impacts and risks will also be analyzed for all relevant stages of the project cycle, including pre-construction, construction and operation phases of the project.

4.4 Physical Environment

The physical environment includes topography, geology, soil, climate, hydrology, drainage, seismology, surface water, groundwater and ambient air.

4.4.1 Topography

Khushab lies in flat agricultural territory immediately south of the Salt Range, marking the end of the Pothohar Plateau and the start of the Punjab plains. Khushab is a place where desert meets mountains. According to the topography of the soil this district is divided into the circles namely; Pahar, Mohar Barani, Mohar Nehri, Thal Nehri, Thal Barani.

4.4.2 Geology

4.4.3 Climate

There is a high temperature in summer which rises 400 C⁰ very frequently. The annual average rainfall is 186mm. Climate of area falls under “arid” category. The climate characterized by low rain, high temperature, low relative humidity, high rate of evaporation and strong summer wind.

4.5 Biological Environment

4.5.1 Flora

During survey and community consultations most common species found were: Bair (Ziziphus Mouritiana), Tahli or Sheesham (Dalbergia Sissoo), Van (Salvadora Oleoides) and citrus fruit. Common floral species with rooted vegetation and few different types of herbs, shrubs, and bushes are also present along canal and roads.

4.5.2 Fauna

The faunal species found in the project area and its vicinity include the following:

A. Mammals

Common animals found in the project area include dogs, cats, house rats, jackals and bats. Domestic livestock observed during field visits include buffaloes, cattle, goats, horses, asses and sheep that are used by the local residents for their livelihood.

4.5.3 Endangered Species

There are no endangered species of flora and fauna observed in the Study Area.

4.5.4 Wetlands

There are no wetlands in the study area.

4.5.5 Wildlife Sanctuaries and Game Reserves

No wildlife sanctuary or game reserve is located in the vicinity of the study area.

4.5.6 Critical Habitats

No wild life sanctuary or game reserve (Critical Habitats) exists near the project area or the study area.

4.6 Socioeconomic Profile

4.6.1 Socio-Economic Baseline Structure

This sub-section provides a socioeconomic assessment pertaining to the demographic and socio-economic conditions of the respondents of the proposed project area. Detailed site visits were conducted by Social Experts to appraise the prevailing socioeconomic conditions and to assess the socioeconomic impacts of the proposed project. During the field surveys, interviews and consultation meetings were held with the local representatives i.e., Numberdars, residents (Males & Females), shopkeepers, land owners, agriculturists, and their laborers, etc., in all villages. The survey tool used for the socio-economic survey tool is attached as **Annex-III**.

4.6.2 Objectives of Socioeconomic Survey

To assess the socioeconomic conditions of the respondents, a social survey was carried out with the following objectives:

- Observe and document the existing socio-economic conditions of the respondents;
- Gain information about the demographic characteristics of the project area;
- Identify the economic resource dependency of the respondents;
- Explore the situation of civic amenities, drinking water conditions, sewerage, solid waste management, education, health facilities, etc.
- Get feedback from the community about existing and potentially social issues; and
- Evaluate the possibilities of addressing their concern through relevant authorities

4.6.3 Methodology Adopted for Data Collection

The methodology adopted for the survey included a detailed desk review of project documents and relevant secondary information including official records and statistics, as well as academic and other subject matter reports. The secondary source information/data/reports include latest Population Census Reports (2017). Similarly, primary source includes focus group discussions (FGDs) with selected households to develop village profiles, individual interviews with key informants and transection walk in the area, which helped the survey team to physically observe the socio-economic conditions in the project area. Meetings were held with entire stakeholders.

The respondents were selected through simple random sampling and for the village profiling, FGD was conducted with the village committees of each village

5 PUBLIC CONSULTATION

5.1 General

This section describes the outcomes of the public consultation sessions held with different stakeholders that may be directly or indirectly affected by the proposed project. The consultation with stakeholders (Govt. departments, farmers, teachers, businessman, women's etc.) during project planning, designing and implementation stages is a key to sustainable development. Likewise, participation of stakeholders is essential to meet the objectives of meaningful consultation for preparation of ESMP. The adequacy of the public consultation is one of the basic criteria used to determine the project compliance with the national / international safeguard policies.

5.2 Objectives and Principles of Consultation

Public consultation plays a vital role in studying the impacts said project on stakeholders in its successful implementation and execution. It provides an opportunity to exchange knowledge with the all stakeholders. Referring particularly to a project related to environmental assessment, involvement of public is all the more essential, as it leads to better and more acceptable decision-making. The overall objective of the consultation with the stakeholders is to help verify the environmental and social issues, besides technical ones, that have been presumed to arise and to identify those which are not known or are specific to the project. In fact, discourse with many who have thoroughly observed the site conditions in the pre-developmental phase, goes a long way in updating the knowledge and understanding

Key Objectives of consultation are:

- Share information with stakeholders on said project installation and operation
- To access the impacts on the physical, biological, and socio-economic environment
- Understand stakeholder concerns regarding various aspects of the project
- Understand the perceptions, assessment of social impacts and concerns of the communities of the project area
- Find out the awareness level and situation of acceptability to identify any issues for the implementation of the said project
- To invite people to express their views about the positive/negative impacts on their life styles and environment

5.3 Consultation and Participation Process

To ascertain the perceptions of different stakeholders about the project scope, its implementation, operation and evaluation, consultation meetings were conducted. The consultation process was carried out in accordance with the World Bank Guidelines on

public consultation. A series of consultation sessions were carried out with stakeholders (Govt. departments, farmers, teachers, businessman, women's etc.) to gain solicit responses for the project interventions. The tool used for the consultation and participation process has been attached as **Annex-V**.

The consultant staff preferably chose sites that are easily accessible and barrier-free to accommodate all persons. The minutes of the meeting from the focus group discussions and community meetings have been noted down by the consultant staff and can be shared with the participants (that chose to share their contact information) and the community. These consultative sessions were designed to exchange information, to discuss the strengths, weaknesses, opportunities, and threats of an idea or project. The consultation meetings proved very useful in information sharing and consensus building.

5.4 Identification of Stakeholders

Stakeholder analysis was carried out to identify relevant stakeholders on the basis of their ability to influence the project, ability of group to get positively benefitted or their vulnerability to be negatively impacted from it. This approach ensured that no relevant groups are excluded from the consultation, and appropriate engagement strategies are developed for each stakeholder.

In preparation for the ESMP, three major groups of stakeholders were identified:

- Local Communities;
- Influential leaders, landowners and religious leaders at village level
- Government Departments

5.5 Information Dissemination

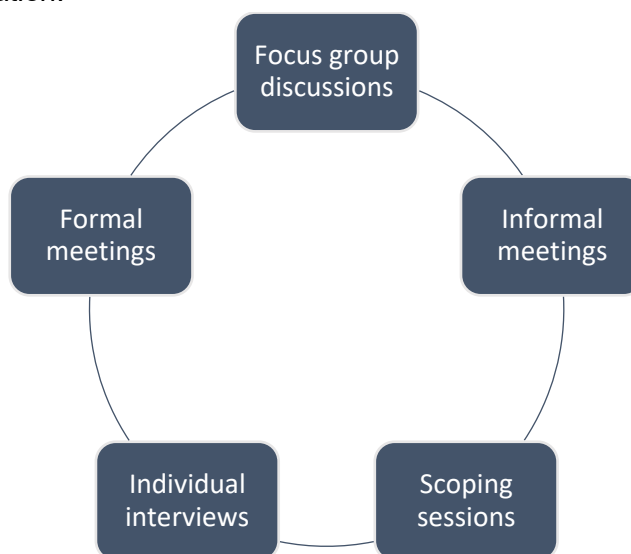
Following information was discussed and disclosed to the stakeholders during the consultation meetings:

- Introduction of the project;
- Description of various project components, their activities and impacts;
- Discuss social and environmental impacts;
- Needs, priorities and reactions of the affected people regarding the proposed projects' impacts; and
- Need of Grievance Redress Mechanism (GRM) in all villages to address the issues & concerns of stakeholders.

For information dissemination to community, culturally appropriate techniques and local language was used.

5.6 Methods of Public Consultation

Public Consultations were carried out in order to establish stakeholder's opinions regarding project implementation. The following methods were used for public consultation and stakeholder's participation:



5.7 Summary of Formal & Informal Meetings

The concerns raised by all stakeholders were considered in developing the ESMP, in order to enhance project acceptability among the general public on social considerations.

5.8 Approach Adopted for The Consultation

To hold the meetings, people were informed one day before the meeting to assemble in the villages. In addition, the consultant team contacted the council members and community representatives of each village and informed about the purpose of these consultation meetings. The representatives played a positive role in information dissemination to locals of villages. The meetings held in an encouraging environment where people expressed their concerns and views freely. Formal meetings and interviews were also conducted with female, vulnerable and disabled of the affected community, to explore their needs, problems and priorities related to project execution. In addition to the formal meetings, individual meetings/interviews were also held with the affected females to efficiently involve them in planning process.

5.9 Stakeholders Concerns Towards the Project

Concerns raised by the participants, particularly with regard to environmental and social impacts of the project have been listed in following Tables which shows concern and responses as derived from scheme wise consultation meetings.

5.10 Pressing Needs of the Consulted Villages Suggested by Local People

Local people were also inquired about the pressing needs of the project area as perceived by them. The foremost preferred needs are providing water supply and sewerage systems. Apart from this, schools, hospital/ dispensary, vocational training institutes, preference to locals in construction work. Due to restricted mobility, they suggested that a friendly grievance mechanism should be developed in all villages to address their concerns during construction time. Guidance and support to local people in the preparation of required documents for compensation were also recommended.

5.11 Disclosure of ESMP

Public disclosure enables affected groups and interested parties to understand likely implications of the project and to provide input into project design. It promotes dialogue among stakeholders i.e., government, community, NGOs and implementing agencies. As per OP 4.01, for all projects the environmental and social aspects must be discussed with the stakeholders.

The objectives of public disclosure are to aid meaningful public consultation and to ensure transparency of World Bank operations to its stakeholders and constituents.

The safeguard documents will be disclosed on the website of PRMSC and on the World Bank projects and operations site.

Presentations containing project information and relevant aspects of public interest will be delivered to the public. Furthermore, project brochures, handouts of presentations, and executive summaries of ESMP in Urdu and English languages will also be distributed to the public.

After the approval, Copies of the ESMP shall be made available to communities and interested parties in accessible locations through local government authorities, (e.g., Village councils, district offices etc.)

6 ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

6.1 General

This chapter identifies the beneficial as well as the potentially significant adverse environmental and social impacts of the proposed project activities during design/ pre-construction, construction and operational phases of the proposed project on the physical, ecological and socio-economic domains of the environment. The appropriate mitigation and remedial measures are proposed in this chapter. A brief description of each aspect and the affected environment in the project area are presented below.

6.2 Scoping of Impacts

Potential environmental and social impacts from the proposed Project on key environmental and socio-economic features in the Project area were identified through the following actions:

- Demarcation of the Area of Influence (Aoi);
- Desk study of engineering investigations, studies and designs;
- Environmental monitoring of air, noise, surface water, wastewater and groundwater;
- Detailed review and analysis of primary and secondary data available for all environmental parameters in Project area such as physical, ecological and social resources;
- Socio-Economic survey to assess the extent of land acquisition, occupation, income and poverty levels of the affected households;
- Consultations with executing and implementing agencies, local government, affected community, and traditional and religious leaders of community;
- Stakeholder consultations with relevant departments, government agencies, NGOs and locals; and
- Knowledge assimilation of international best practices on environmental assessment of infrastructure projects.

6.3 Methodology

Selection of an appropriate and customized methodology for the impact assessment is critical for the ESMP study. The impacts have been assessed on the basis of proposed project life cycle i.e., Pre-Construction, Construction and Operational and Maintenance (O&M) stages. For the identification of the potentially significant and non-significant environmental and social impacts, different tools were utilized as detailed below:

6.3.1 Screening Checklist

Based on the findings of desk studies and processed satellite imageries, screening checklists was prepared to screen out the potentially significant adverse environmental and social impacts during pre-construction, construction and operational phase of the proposed project. The objective of the impact screening is to assess the significance of the issues related to the atmosphere, climate, water resources, land resources, ecological environment, socio-economic environment, transport, infrastructure and communication, natural risks, hazards and external constraints of the Project for the proposed development. After the compilation of baseline information, processing of acquired satellite imagery, the screening checklist was filled to screen out the adverse impact of the proposed Project during the pre-construction, construction and operational phases. Then a screening report was prepared and submitted for the perusal to the PRMSC and WB.

6.3.2 Notion of Significance

The “notion of significance” is based on the following criteria:

Extent: The scale of impact, i.e., limited to the immediate areas of development activity (the site); limited to within a distance reach of the development or affecting the region as a whole; or occurring at a national or international scale;

Duration and Frequency: A prediction/forecasting of the lifetime of the impact: i.e., short-term; medium term; long term with the impact ceasing after the operational life of the development; or considered permanent and how many times the event will occur during that period;

Intensity: A description of the intensity (magnitude/size) of the impact: i.e., high, medium, low, or negligible (no impact). The specialist studies must attempt to quantify the magnitude of impacts and outline the rationale used. Where appropriate, national standards are to be used as a measure of the level of impact;

Reversible/Irreversible: Changes considered irreversible, for example, the loss of biodiversity due to a change in water quality;

Probability: The likelihood that the event will actually occur; and

Legal Restriction: If the action is likely to affect, or be affected by a legal restriction.

Taking into account these criteria, potential significance was classified as either:

Low: an impact for which no mitigation is necessary;

Medium: an impact that requires effective mitigation; and

High: an impact, which, if not mitigated, could stop the Project from proceeding.

The potentially significant impacts were then further investigated in more detail to make a comprehensive assessment of the actual impacts.

6.3.3 Study Area/ Area of Influence

Refer Chapter 4: Description of the Environment, **Section 4.3.**

6.4 Anticipated Impacts during Pre-Construction/Design Phase

Design phase impacts include land acquisition, resettlement, social acceptability and disturbance to existing utilities. Following mitigations will be adopted to minimize siting and design phase impacts.

Mitigation Measures

i. Land Acquisition and Resettlement

- The subprojects will be established on the land owned by community or Government land. Community land will be acquired through VLD procedure. If VLD will not be possible, the RPF as part of this report will be applied. Complete documentation will be maintained for VLD.
- Valuation and compensation of affected assets of community should be in line with RPF/Sub-projects ARAPs and considered before the field activities.
- Community consultations will be carried out before establishing the sites.
- Decision Making through grass root consultation & proper document at each step to provide social acceptability and avoidance of elite capture.
- It will be ensured through screening checklist that the subproject avoids any ecologically sensitive areas, PCRs and arrears having any critical habitats.
- Involuntary Resettlement Screening Checklist is prepared to be used to check the status of land belong to be executed for sub-projects.
- It will be ensured that private or government land are free from any disputes and APs are duly compensated as per the Entitlement Matrix.
- All the relevant stakeholders will be taken onboard for the identification construction sites of subprojects.
- Involuntary Resettlement from the nearby surrounding areas after operation phase may occur due to odor nuisance or if the community land to be used for construction of sludge pond has squatters. For this, during screening procedure, it will be ensured that there are no inhabitants /squatters at that piece of land. Negative post project impacts can also be minimized by planning the construction in preferably outside the populated area or an area with low population density in surroundings

ii. Water Quality Deterioration due to Improper Design

- Design characteristics in case of construction of sludge ponds and rehabilitation of drainage system water distribution networks will be considered to avoid leakages

- Degradation of GW quality if leakage may occur which should be considered in engineering design to control leakage
- In case of mixing of storm water into the wastewater collecting system, the water loads will be increased which should be adjusted in the design capacity at planning/design stage
- Environment friendly designs of toilets and suitable for that specific area should be considered by the engineering design team at design stage.
- All structural, layout and engineering will be carried out in strict accordance with the applicable bylaws and engineering parameters.

iii. **Topography**

The proposed project does not alter the overall topography of the area. In fact, said project will help in improving present situation and to improve aesthetic of area.

iv. **Disturbance/damage to existing utilities on the sites**

Identify and include locations and operators of existing utilities on the sites (electric poles and wires, water lines within proposed project sites) in the detailed design documents to prevent unnecessary disruption of services during construction phase

6.5 Construction Phase Impacts

Construction phase will be the most significant part of the project with respect to environmental considerations, since most of the impacts are likely to take place during this period. Various construction activities will invariably create environmental disturbances, which may have impacts on the physical, biological and social environment of the area and nearby communities.

Such impacts include the following:

- Physical Environment
 - Soil erosion and degradation
 - Air quality deterioration
 - Water Quality (Surface and ground water)
- Biological Environment
 - Loss of Vegetation
 - Damage to wildlife
- Socio-economic Environment
 - Traffic congestion
 - Noise and vibration
 - Safety hazards, Public health and nuisance issues

6.5.1 Impacts on Physical Parameters

6.5.1.1 Soil erosion and contamination

Following impacts on soil quality are envisaged due to proposed project interventions:

- Excavation, land clearing and land levelling activities can destabilize the surrounding land surface;
- The unspent materials and debris produced from consumed up materials, if left as such and allowed to mix with soil underneath, can degrade the quality of receiving soils;
- Leakages of oils, lubricants, chemicals, and other similar substances from their storage sites and from engines of the generators, machines, equipment and vehicles can spoil the receiving soils and may undermine ability of the spoiled soils to support growth of vegetation and plants.

However, it is envisaged that due to project activities, the impacts will be minor and limited to project area only.

Mitigations:

- The dumpers and waste vehicles shall be covered properly; no waste should scattered out from the vehicles. The floor of the facility shall have thick cover to separate waste from the soil
- All spoils will be disposed of at designated site and the site will be restored back to its original conditions;
- Avoid use of heavy machinery on wet soil to prevent damage to soil structure;
- Land clearing, leveling and grading should be minimized.
- Provision of such native species of trees which help in reducing the erosion.
- Vehicles and equipment will not be repaired in the project site. If unavoidable, impervious sheathing will be used to avoid any soil contamination.
- For the domestic sewage from the construction site, septic tanks will be constructed having adequate capacity.
- Waste oils (if any) will be collected in drums and sold to the recycling contractor.
- Domestic solid waste will be disposed in a manner that does not cause soil contamination/water contamination.
- All the unspent and left-over materials be completely removed offsite upon completion of construction and the site be restored to original or near to original condition.

6.5.1.2 Air Pollution

Air quality will be affected by fugitive dust emissions from construction machinery; dust from the unpaved surface and construction vehicles. Emissions may be carried over longer distances depending upon the wind speed, direction, temperature of surrounding air and atmospheric stability. Besides, multifarious construction activities, increased vehicular traffic (construction vehicles) would also contribute to the localized airborne dust. The larger sized particles, under influence of gravity, tend to settle down in the immediate vicinity of the source. The Suspended Particulate Matter (SPM) tends to remain suspended in the environment for much longer and persistent time and is an environmental hazard. The objectionable impacts of settling of the suspended dust would be its dry deposition on

vegetation, motor vehicles, structures, and other exposed surfaces. Exhausts from fossil fuel burning in the construction machinery will also deteriorate local air quality. Similarly, exhausts from generators can also have impacts on air quality in the vicinity. The overall impact on the quality of air during the construction phase will be monitored, however, it will be temporary and limited to the project's implementation phase only.

Mitigation Measures

The construction phase impacts on ambient air of the proposed Project could be effectively mitigated by the implementation of simple procedures by the Contractor including but not limited to the following:

- All vehicles, machinery, equipment and generators used during construction activities should be kept in good working condition and be properly tuned and maintained in order to minimize the exhaust emissions;
- Open burning of solid waste at construction site should be strictly banned;
- Preventive measures against dust should be adopted for on-site mixing and unloading operations;
- Construction materials (sand, gravel, and rocks) and spoil materials will be transported through trucks covered with tarpaulins and all vehicles (e.g., trucks, equipment, and other vehicles that support construction works) will comply with the PEQS for carbon emissions and noise;
- Regular water sprinkling of the site should be carried out to suppress excessive dust emission(s);
- Emissions from power generators and construction machinery are important point sources at the construction sites. Proper maintenance and repair is needed to minimize the hazardous emissions;
- Construction equipment is generally left idling while the operators are on break or waiting for the completion of another task. Emissions from idling equipment tend to be high. Existing idling control technologies, which automatically shut the engine off after a preset time can reduce emissions, without intervention of the operators;
- PEQS applicable to gaseous emissions generated by construction vehicles, equipment and machinery should be enforced during construction works;
- Construction workers should be provided with masks for protection against the inhalation of dust;
- Regular monitoring of air quality in accordance with the formulated environmental monitoring plan (given in EMP).
- Vehicle speed in the project area should be prescribed not more than 20 km/ hr and controlled accordingly
- Construction sites including soil piles should be fenced to avoid material escape, generation of dust and access to children

- Soil and temporary soil piles should be covered or sprayed with water if generating dust.
- All the vehicles deployed for material movement shall be spill proof to the extent possible.
- Equipment/vehicles deployed for construction activities shall be monitored regularly

6.5.1.3 Noise and Vibration

The noise and vibration will be produced due to the operation of construction machinery and equipment like bulldozers, scrapers, excavators, compactors, trucks, large capacity dumpers, graders, heavy duty cranes, concrete batching plants and stone crushers. The operation and movement of such equipment will increase the noise and vibration in the Project Area. Noise and vibration are perceived as one of the most undesirable consequences of construction activity. The above machinery is expected to generate noise levels that would be severe in the project area. This impact is temporary and moderate in nature.

Mitigations

- For the construction machinery generating noise level in excess of that prescribed in PEQS, Contractor will make arrangements to bring the noise level within applicable limits (including proper tuning of vehicles and mufflers/silencers).
- Movement of the trucks and other construction machinery causing high noise levels must be restricted at night time to avoid disturbance to the nearby locality. Construction work shall be limited to day light hours (6 AM to 6 PM).
- Proper noise barrier boundary walls will be built on asphalt/ concrete plants which come close to any locality.
- Providing the construction workers with suitable hearing protection like ear cap, or earmuffs and training them in their use.
- Use of low noise machinery, or machinery with noise shielding and absorption.
- Contractors shall comply with submitted work schedule, keeping noisy operations away from sensitive points; implement regular maintenance and repairs; and employ strict implementation of operation procedures.
- Provide prior information to the local public about the work schedule;
- Minimize noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and portable street barriers reduces the sound impact to surrounding sensitive receptor; and
- Maintain maximum sound levels not exceeding 80 decibels (dbA) when measured at a distance of 10m or more from the receptor

6.5.1.4 Impact on Water Resources (Surface and Groundwater Contamination)

The project activities that can contaminate soil may also contaminate the surface water and groundwater. These include.

- Solid waste disposal
- Sewerage disposal
- Equipment/ vehicles maintenance
- Spillage/ leakage of fuels, oils and chemicals
- Camp site sanitation facilities.

Mitigations

- Wastewater from construction sites should not be disposed into the water bodies;
- No waste should be disposed in the open.
- PEQS and WHO guidelines will be used for any effluent generated from the project related activities, before its discharge into any surface water resources.
- Strict Measures would be taken and restrict workers not to wash hauling vehicles near the canal as it will pollute the surface water source which is used by the animals of the nearby communities and for agriculture purpose.
- The sewage water shall not discharge into the water bodies. Similarly, rain water shall be contained in pit and after treatment shall be used for sprinkling onto the roads, and irrigation purposes. Septic tanks are proposed for initial treatment of sewage then the treated water will be used for irrigation purposes. Moreover, in order to avoid dispose off in canal, waste water treatment plant is proposed for effective treatment.
- Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets
- Stockpiles shall be provided with temporary bunds
- Prioritize re-use of excess spoils and materials in the construction works. If spoils will be disposed, consult with Implementing Agency on designated disposal areas
- Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies
- Place storage areas for fuels and lubricants away from any drainage leading to water bodies

6.5.1.5 Storage and Handling of Construction Material and Solid Waste

At construction site excess excavated earth, excess construction materials and solid waste is to be handled. Large quantities of waste will be produced at the different stages of the project. Without a proper solid waste management system, solid waste may result in odor, breeding ground for disease vector, and aesthetic concerns. Solid waste may result in leachate production and percolation in groundwater. The impact of solid waste will be moderate in nature.

Mitigations:

- Three Rs: "Reduce, Reuse, and Recycle" waste management hierarchy will be adopted.
- Recording system for the amount of waste generated, recycled and disposed;
- Incorporate technical design features for refuse collection containers at sites that would minimize burning impacts;
- Devise plan(s) for safe handling, storage and disposal of harmful materials;
- Burning of waste shall not be allowed in any case; and

- All recyclable waste should be used on site or sold out for reuse in market.
- Solid waste generated during construction and camp sites should be safely disposed of at designated waste disposal sites.
- Construction workers and supervisory staff should be encouraged and educated to practice waste minimization, reuse and recycling to reduce quantity of the waste.
- Waste disposal plan must be reviewed during the entire construction phase in the light of changing weather conditions.
- Close coordination should be carried out with concerned department for the proper disposal of construction waste.
- Proper disposal of surplus / excavated earth. And also efforts to minimize the quantity of surplus earth by better planning to use this earth for embankment /depression filling etc. Maintain PPE (helmet, gloves, boots, etc.) details for each type of work
- Details of materials at each site (type & quantity)
- Record of Construction waste/debris generated (details & quantity)
- Detail the sequence of work process (step-by-step) including specific details of each work
- Contractor's supervision & management arrangements for the work
- For Emergency: Designate (i) responsible person on site, and (ii) first aider
- Typical site layout plan including pipe trenching, placement of material, excavated earth, barricading etc.
- The excavated soil, placed sprayed with water if generating dust.
- The following should be included in the site layout plan: i. Provide barricading/security personnel at the site to prevent entry/trespassing of pedestrian/vehicles into the work zone. ii. Location of temporary stockpiles and provision of bunds
- Separation of stockpiles areas with workers/vehicle movement paths to avoid disturbing the stockpiled soil

6.5.1.6 Impacts related to Contractor's Camps

During the construction stage, the solid waste and sanitary wastewater will be generated from the contractor's camps due to the construction activities and presence of the temporary toilet. Staggering of solid waste on the ground and stagnation of waste water will give rise to unhygienic conditions and spread of diseases. Following mitigation measures will be adopted to minimize this impact:

- Contractor should be responsible for proper disposal of the solid waste and sanitary wastewater through proper procedure
- Contractor should provide septic tank for the toilets to treat the sanitary wastewater before its discharge.

6.5.1.7 Obstruction to Traffic Flow

Excavation and construction operations may result in temporary blockage of some roads/streets, which may result in hindrance to normal traffic flow.

Following mitigation measures will be adopted to minimize this impact:

- Contractor should provide the construction schedule to staff

- Sequencing of activities in a way to avoid excavation in adjacent streets so that alternate passages are available to the people
- Providing residents with advance warning of construction activities
- Avoiding excavation of trenches at junctions during peak-hours
- Backfilling of the trenches at the junctions in minimum possible time
- Construction work camps shall be located at least 200 m from residential areas
- Do not consider residential areas; for stockpiling the waste/surplus soil.

6.5.1.8 Contamination to Water supply or Water bodies due to Sewer Leak, Block or Overflow

Placing of sewer/drain lines near water supply lines is highly undesirable due to chances of mixing of sewage in the water causing serious health problem for the residents. In order to mitigate this impact, sewerage and drainage lines should be laid on the opposite side of the water supply lines. In unavoidable situations, when sewers are to be laid on the same side of the road, enough space will be kept between these two lines and depth of sewer line should be greater than the water supply line to avoid contamination of water supply lines in the event of sewerage line leakage. Further mitigations will include:

- Engineering controls
- Consultation with communities to know the status of drinking water supply schemes
- Public consultation before time and supplementary arrangements if water supply has to be stopped for certain time period
- Water quality analysis before during and after construction activities
- Limit the sewer depth where possible.
- Sewers shall be laid away from water supply lines and drains (at least 1 m, wherever possible);
- Where possible, the sewer line should be laid deeper than the water pipeline (the difference between top of the sewer and bottom of water pipeline should be at least 300 mm)
- In unavoidable, where sewers are to be laid close to storm water drains or canals or natural streams, appropriate pipe material shall be selected (stoneware pipes shall be avoided)
- For shallower sewers, use small inspection chambers in lieu of manholes;
- Design manhole covers to withstand anticipated loads & ensure that the covers can be readily replace if broken to minimize silt/garbage entry
- Establish routine maintenance Project, including: regular cleaning of sewer lines to remove grease, grit, and other debris that may lead to sewer backups. Cleaning should be conducted more frequently for problem areas.
- Inspection of the condition of sanitary sewer structures and identifying areas that need repair or maintenance. Items to note may include cracked/deteriorating pipes; leaking joints or seals at manhole; frequent line blockages; lines that generally flow at or near capacity; and suspected infiltration or exfiltration; and Monitoring of sewer flow to identify potential inflows and outflows
- Conduct repairs prioritized based on the nature and severity of the problem. Immediate clearing of blockage or repair is warranted where an overflow is currently

occurring or for urgent problems that may cause an imminent overflow (e.g. pump station failures, sewer line ruptures, or sewer line blockages);

- Review previous sewer maintenance records to help identify “hot spots” or areas with frequent maintenance problems and locations of potential system failure, and conduct preventative maintenance, rehabilitation, or replacement of lines as needed;
- When a spill, leak, and/or overflow occurs, keep sewage from entering the storm drain system by covering or blocking storm drain inlets or by containing and diverting the sewage away from open channels and other storm drain facilities (using sandbags, inflatable dams, etc.). Remove the sewage using vacuum equipment or use other measures to divert it back to the sanitary sewer system.

6.5.2 Impacts on biological parameters

6.5.2.1 Impacts on Flora

Local flora is important to provide shelters for the fauna, offer fruits/or timber/fire wood and protect soil erosion. Therefore, damage to flora has a wide range of adverse environment impacts. As a precautionary principle, the following mitigation measures have been proposed:

- No damage to flora is envisaged however in any case if trees are to be removed then planting of ten trees for every tree cut during construction is proposed.
- Measures to prevent soil and water contamination will forestall any adverse impact on the floral diversity of the area.
- Contractor shall prepare a conservation plan to avoid any impact on flora during construction.

6.5.2.2 Impacts on Fauna

Sub-project area does not fall in any of the wildlife habitat and does not cause any harmful impacts directly and indirectly. There are no wetlands, or any other type of natural habitat to support critical mammal or bird species. There might be a risk to key ground nesting birds, which could be struck during works throughout the nesting season. It is anticipated that the birds shall vacate the area before construction machinery approaches. Following Mitigation Measures will be adopted:

- The contractor will erect a fence within 50ft of the nest and prohibit any works within this area until approved by the Engineer.
- The contractor’s staff will be required to sign a code of conduct prohibiting hunting, poaching or trapping of animals.
- Provide adequate knowledge to the workers regarding protection of fauna, punishments for illegal poaching.

6.5.3 Impacts on social parameters

6.5.3.1 Impacts on Public Health and Safety Hazards

The construction activities and vehicular movement at construction sites may result in roadside accidents particularly inflicting local communities who are not familiar with presence of heavy equipment. Quality of groundwater and surface water resources available in the nearby local communities may be affected due to the construction activities, oil spillage and leakage, roadside accidents, etc. The proposed project will also have potential of air (dust pollution), noise and vibrational impacts on nearby community. The labor works with different transmittable diseases may cause spread out of those diseases in the local residents. The construction areas located near the residential, settlements, may cause accident for the people moving near to those areas. Conflicts may arise between the local community and the construction workers, which may be related to religious, cultural or ethnic differences, or based on competition for local resources.

Mitigations

- Contractor will ensure the provision of medicines, first aid kits, emergency vehicles, etc. at the work place.
- The laborers with different transmittable diseases will be restricted within the construction site.
- Ensure that the site is restricted for the entry of irrelevant people particularly children.
- Training of workers in the construction safety procedures, environmental awareness, and equipping all construction workers with safety boots, helmets, gloves, ear plugs, and protective masks, and monitoring their proper and sustained usage.
- Provision of proper safety and diversion signage at sensitive/accident-prone spots.
- Setting up speed limits in close consultation with the local stakeholders.
- The mitigation measures provided for air and noise shall be adopted to reduce the air pollution, noise pollution and vibrational impacts on nearby community.
- Defensive driving practices will be inculcated in the project drivers through trainings, posters and other similar measures.
- Vehicle speeds of 20 km/hr at the project site will be implemented.
- Personnel injuries risks can be mitigated through the provision of appropriate training and emergency response procedures.
- The contractor will ensure better working conditions for its employees.
- Firefighting equipment will be made available at the site offices and construction workers. Construction staff will be provided firefighting training.
- Road signage will be fixed at appropriate locations to reduce safety hazard associated with project-related vehicular traffic

6.5.3.2 Occupational Health and Safety Occupational Health and Safety (OH&S)

OH & S related impacts will arise during construction phase activities including clearing of earth, levelling, compaction, carpeting, pavement finishing and testing & commissioning. Eye injury can be caused by stone or metal particles. Hazard of being hit by falling objects, major hand-arm and whole body vibration hazards, skin and respiratory tract irritation from exposure to cement dust, overexertion and awkward postures etc. will be another impact.

Security as well as the safety of the Contractor and Consultant staff will be major issue. Operating mechanical and electrical equipment will trigger the H&S issues e.g., struck by moving vehicles or other equipment, slips or trips, struck by flying objects, such as dirt or splashed fluids, caught in pinch points, shear points, crush points, falling from machine etc. Considering these consequences, this impact temporary and medium probability.

Mitigations

- Providing basic medical training to specified work staff and basic medical service and supplies to workers;
- Training of workers in construction safety procedures, environmental awareness, equipping all construction workers with safety boots, helmets, gloves and protective masks, goggles, shields and monitoring their proper and sustained usage;
- Contractor will ensure the provision of medicines, first aid kits, ambulance etc. at the camp site;
- Contractors will instruct their staff to use Personnel Protective Equipment (PPE) (e.g., wire containment, displaying warning signs along the work site, communicating advance warnings to mats) to enhance the safety; and
- An emergency management plan must be devised by the contractor in close coordination with the provincial emergency services
- The contractor will be required to strictly follow WB EHS Guidelines.
- In the current scenario of COVID-19, GoPunjab Primary and Secondary Healthcare Department has issued Health Safety SOPs for construction workers for COVID-19 and they will be used during pandemic situation
- The construction contracts will include appropriate clauses to protect environment and public health. Avoid stagnation of water and initiate drainage/cleanup of stagnant water.
- Include procedures for documenting and reporting accidents, diseases, and incidents.

6.5.3.3 Child labor

Standard clause in the contracts related to child labor explicit ~~provisions~~ etc. will be provided and contractor will ensure compliance to the contractual provisions on bonded and child labor, equal wages for similar work explicit prohibitions, etc.

6.5.3.4 Impacts on Women, Children, and Vulnerable Groups

It will be ensured that the subprojects do not have any negative impacts on women, children and vulnerable groups. Gender framework will be implemented throughout the project, moreover stakeholder consultation will be implemented to mitigate the impacts at each step. Also, for community toilets, ramps for people with disabilities will be provided

6.5.3.5 Social/ Cultural Conflicts

During the construction phase of the project, conflicts may arise between labor force and Local communities. Use of local resources (existing infrastructure and utilities) by the construction workers can generate stress on the local residents. Furthermore, difference in cultural values may also cause discomfort to local residents. This impact is temporary and moderate adverse in nature.

Mitigation Measures

- Local labor should be preferably employed for the construction works;
- Careful planning and training of work force to minimize disturbance to the local people; and
- Public notification through print or electronic media during the entire construction phase to avoid any inconvenience in accessibility to the locals.

6.5.3.6 Impacts due to Labor Influx

For the implementation of Project activities, skilled and unskilled labor is required by the contractor. Mostly, skilled and unskilled workers have been associated with the contractor since long which they utilize, where they are required for the projects, and while other workers are hired from the different areas that belong to different cultural backgrounds. Social problems and conflicts that are associated with Labor Influx are as follows:

- Risk of social conflict: Conflicts may arise between the local community and the construction workers, which may be related to religious, cultural or ethnic differences, or based on competition for local resources. Ethnic and regional conflicts may be aggravated if workers from one group are moving into the territory of the other;
- SEA/SH: Increase in Sexual Harrassment (SH) and Sexual Exploitation and Abuse (SEA) in the project area may occur due to influx of migrant labor;
- Gender Based Violence
- Increased risk of illegitimate behavior and crime: The influx of workers and service providers into communities may increase the rate of crimes and a perception of insecurity by the local community. Such illegitimate behavior and crimes can include theft, physical assaults, substance abuse, sexual assault and human trafficking;
- Impacts on community dynamics: Depending on the number of incoming workers and their engagement with the host community, the composition of the local community, and with it the community dynamics, may change significantly. Preexisting social conflict may intensify as a result of such changes;
- Increased burden on and competition for public service provision: The presence of construction workers and service providers (and in some cases family members of either or both) can generate additional demand for the provision of public services, such as water, electricity, medical services, transport, education and social services. This is particularly the case when the influx of workers is not accommodated by additional and separate supply systems;
- Increased risk of communicable diseases and burden on local health services;
- Local inflation of prices, accommodations and rents: A significant increase in demand for goods and services due to labor influx may lead to local price hikes and crowding out of community consumers. Depending on Project worker income and form of accommodation provided, there may be increased demand for accommodations, which again may lead to price hikes and crowding out of local residents; and
- Increase in traffic and related accidents: Delivery of supplies for construction workers and the transportation of workers can lead to an increase in traffic, rise in accidents, as well as additional burden on the transportation infrastructure. This impact is negative and temporary in nature.

Mitigation Measures

Suggested mitigation measures for smooth execution of construction activities include:

- Labor camp(s) should be established away from residential population;
- Preference should be given to the local people to work with contractor, and contractor should hire maximum labor force from the Project Area because this will reduce the labor influx;
- Awareness should be created among the work force to ensure respect for local customs;
- Construction work should be completed within the stipulated time to move workers to next location;
- Labor force should be shuffled with the time;
- An effective GRM should be established for the Project to resolve all issues related to the community. Thus, progress regarding resolving the issues should be monitored closely;
- Create awareness among workers on proper sanitation and hygiene practices to endorse proper health and maintain good housekeeping practices at all Project sites;
- Provide adequate personal hygiene facilities in good condition with adequate supply of clean water;
- Make arrangements to treat the affected workers on time to control the movement of vector borne diseases;
- Provide proper and free COVID-19, HIV/AIDS and STI health screening and counseling for site workers and community members;
- Develop and enforce a strict code of conduct for workers to regulate behavior in the local communities;
- Taking all sensible precautions to avert illicit, vicious conduct by or amongst the Contractor's personnel, and to preserve unity and harmony, and protection of people and property on and near the sites;
- Prohibiting drugs, alcohol, weapons, and ammunition on the worksite among personnel;
- Site security preparations must be contained within the Bills of Quantities (BOQs) to avoid any delays which might be caused due to insecurity;
- Appropriate fencing, security check points, gates and security guards should be provided at the construction sites to ensure the security of all equipment, machinery and materials, as well as to secure the safety of site staff; and
- The Contractor must guarantee that good relations are maintained with local communities and their leaders to help reduce the risk of vandalism and theft.
- Awareness should be created among the females at individual and community levels about the constructions sites;
- Gender protection act should strictly be enforced during the construction activities in the Project Area, and monitor the implementation through field staff;
- Raise awareness among the communities of the potential risks of GBV, and establish response services in the communities that can respond to instances of GBV (particularly those related to issues of labor influx);
- The Contractor should make sure that no discrimination is made on the basis of gender while hiring of workers. Complete SOPs should be formed and implemented

by the contractor regarding working women at site. Implementation on these SOPs should be monitored by the implementation Consultants.

- Contractor should take proper measures to address and resolve issues relating to harassment, intimidation, and exploitation, especially in relation to women.

6.6 Operation Phase Impacts

6.6.1 Hazards due to Blockage of Sewer/drainage Lines

The project has been designed to serve the needs upto year 2050. It can be presumed that blockage would not occur under normal operation conditions. However, it was observed that people generally throw solid waste into sewer lines and drains resulting into choking of the network. Any blockage in the sewerage/drainage network can result in overflows causing nuisance to people, and serious health and sanitation problems during the operation phase. The wastewater may also contaminate soil and groundwater. Mitigation measures should include:

- Public awareness programme will be launched as a project subcomponent
- Provision of sufficient O&M staff
- Provision of sewer cleaning equipment for cleaning the sewers should be included in the project cost
- Development of a system to register public complaints and urgent clearance of blockages in the system

6.6.2 Health and safety of Operation and Maintenance Staff

The operation of the proposed project may cause some negative impacts on health and safety of workmen. The sewer and drain cleaning staff may be exposed to waterborne communicable diseases if precautionary measures are not adopted.

- All O&M staff should be trained in operation procedures designed to avoid infection from wastewater, and health and safety procedures to protect against any exposure to hazardous conditions.
- Ventilation of sewers/manholes should be done before entry to avoid accumulation of noxious gases.
- Workers should also be inoculated against infectious diseases and kept under regular medical checkup.
- Formal emergency procedures should be developed by concerned officials for dealing with the accidents.
- The sewer-cleaning workers should be provided protective clothing
- Safety equipment should be provided and use of PPEs should be strictly monitored

6.6.3 Leachate generation from solid waste at the site

Leachate generation may cause soil and water contamination. To mitigate this impact:

- Design standards for Leachate control system as per requirements shall be reviewed prior to the construction of facility.

- Runoff away from the site will be helpful to limit leachate generation and reduces infiltration.
- Moreover, Leachate collection pond will be constructed generated from solid waste windrows that will be further recirculated and utilized for composting purposes.
- Waste should be properly covered at the site and maximum effort shall bring in to practice to avoid contact with precipitation.
- Vegetative cover around also plays significant role in leachate production control by limiting infiltration and reduce percolation.

6.6.4 Odor problems due to Solid Waste Collection Site and Sludge Pond

Odor generated from solid waste collection site may cause nuisance to nearby community. It can be controlled by following measures:

- Layering daily soil cover on regular basis in order to prevent odors and vector problems. Also, odor filter (bio- filters) shall be installed at the facility to absorb the bad smell. In addition to that, proper design and operation of gas management system shall be recommended.
- The indigenous and fancy plants shall be planted alongside the waste processing facility and in the surrounding to reduce the odor and increase its aesthetic value.
- The use of a digesting treatment before disposal can considerably lessen these odors.
- However, there is no natural or artificial structure to prevent this diffusion, and the effect may be alleviated to some extent by careful alignment.
- Exhaust and suspended particulate may be lessened if methane gas is recovered from the sludge and used for energy generation

6.6.5 Visual and Aesthetic Impacts

The boundary walls shall be constructed alongside the facility to avoid eye soiling impacts. The waste transfer vehicles shall be properly covered. Also, the indigenous and fancy plants shall be planted alongside the waste processing facility to reduce the odor and increase its aesthetic value

6.6.6 Sludge Disposal

The waste water treatment and pit/septic tank will generate a considerable amount of waste in the form of sludge. This sludge must be disposed of carefully.

- Sludge after emptying the tanks/pits should be properly disposed at proper location and left for degradation.
- Sludge will not be disposed of into open land

Nevertheless, depending on the quality of the sludge, it could be used as fertilizer

7 ENVIRONMENTAL & SOCIAL MANAGEMENT & MONITORING PLAN

7.1 General

This section aims to address the measures which need to be adopted during each phase of the project to avoid, contain, mitigate or compensate for the potential impacts identified in **Section 6**. The Environmental & Social Management & Monitoring Plan (ESMMP) is the major part of this section and forms the gist of this study. ESMMP not only includes Best Management Practices (BMPs) but also includes monitoring indicators, frequency, responsibility, and estimated environmental budget. This ensures that mitigation, monitoring, and management consideration form a part of the documentation used for decision making and the basic benefit of defining the responsibilities is to make sure that the suggested mitigation measure will be implemented at the construction and operation stages of the project. A summary of the mitigation measures for potential impacts have also been given in this section to support ESMP. Moreover, a framework for the implementation of ESMP has been discussed in this section.

7.2 Objectives of ESMP

The main objectives of ESMP are to:

- Provide details of the project impacts along with the proposed mitigation measures and the corresponding implementation activities;
- Define the roles and responsibilities of the Project Proponent, Contractor, Supervisory Consultants, and other players and effectively communicate environmental issues among them;
- Define a monitoring mechanism, and reporting frequency and identify monitoring parameters to ensure that all the mitigation measures are completely and effectively implemented, and identify the resources required to implement the ESMP and outline the corresponding financing arrangements.
- Ensure that the project will adopt COVID-19 best international standard operating procedures (SOPs) during the construction and operational phases.

7.3 Implementation of Environmental & Social Management & Monitoring Plan (ESMP)

The institutional arrangement for the implementation of ESMMP for PRSWSSP is presented in **Figure 7.1**. The proponent PIMU-PRMSC will be responsible for compliance of with environmental and social safeguard requirements of the proposed project.

The proposed project activities will be monitored and managed by the PIMU-PRMSC. The Environmental and Social Cell (ESC) staffed by qualified environmental and social specialists has already been established under PRSWSSP. The ESC will be the custodian of the ESMP. ESC will support ensuring the compliance of ESMP. ESC will submit progress

reports for the implementation of the ESMP to WB and PEPA as per environmental approval/ NOC conditions for the PRSWSSP.

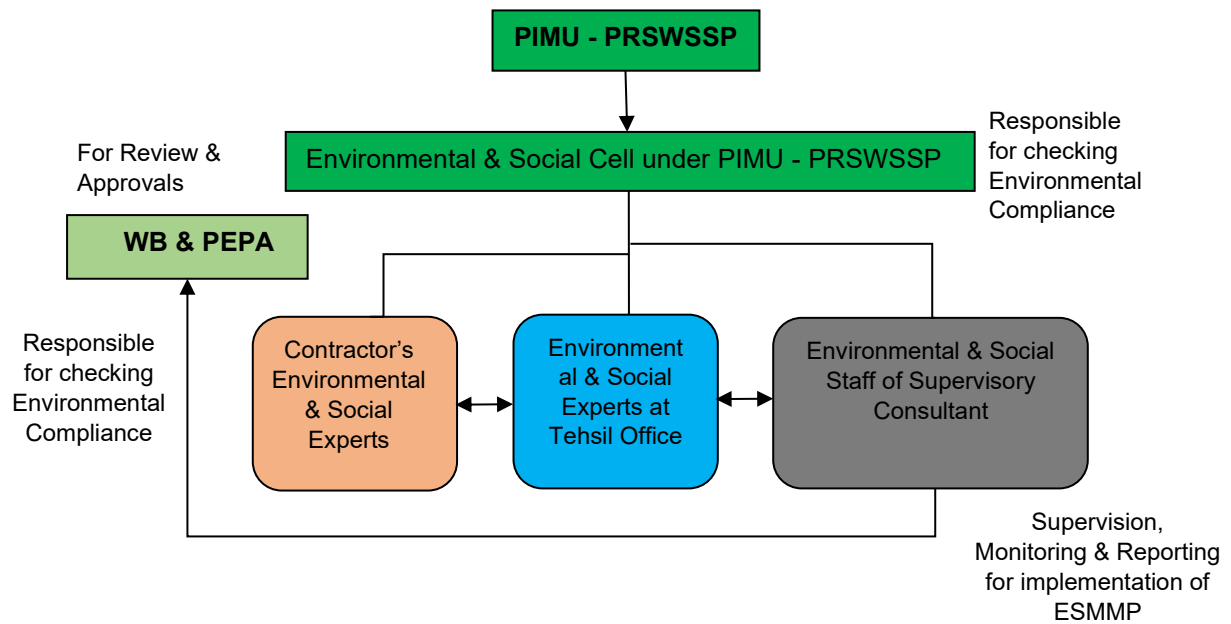


Figure 7.1: Organizational Setup for implementation of ESMMP

7.3.1 Roles and Responsibilities of the Functionaries involved in ESMMP Implementation

A. World Bank

The current proposed project falls under category E2 in view of limited environmental and social impacts and thus require an ESMP. World Bank shall review and approve the safeguard documents including ESMP. The Bank shall also review and approve the quarterly and biannually prepared progress reports.

B. Punjab Environmental Protection Department

As per Punjab Environmental Protection (Amendment) Act, 2012, Punjab EPD is responsible for environmental protection and pollution control. The Punjab EPD is responsible for the approval of the EIA/ IEE of all the developmental projects under their jurisdictions. As per Punjab Environmental Protection (Review of Initial IEE/EIA) Regulations 2022, Schedule-II, EIA is required for 'Water Supply, Sewerage System and Treatment (Category F) & Waste Storage and Disposal (Category G). Based on the EIA and ESMP, Punjab EPD will monitor (as and when required) the project activities.

C. PIMU-PRMSC

The Project Director of PIMU-PRMSC is the in-charge for the financial and technical matters related to PRSWSSP. His responsibilities for monitoring the ESMP will consist of:

- Ensuring that the required environmental training is provided to the concerned PIU staff;
- To carry out random site visits to the construction sites to review the environmental performance of the Contractor;
- Review monitoring reports for the progress of environment-related activities;
- Make sure that the Contractor is implementing the additional measures suggested by the Supervision Consultant (SC) in environmental monitoring reports;
- To assist the Contractor in obtaining necessary approvals from the concerned departments;
- Maintaining interface with the other line departments/ stakeholders; and
- Reporting to the Punjab EPD on the status of ESMMP implementation.

D. Environmental and Social Cell (ESC)

ESC has already been established in the PIMU-PRMSC which is responsible to:

- Make sure that all the contractual obligations related to environmental and social compliance are met;
- Monitor the progress regarding the implementation of environmental and social safeguards as provided in the ESMMP;
- Oversee the compliance of all the monitoring programs as given in ESMMP;
- Check randomly whether monitoring of the environmental aspects of the proposed project during construction and operational phases is being properly carried out;
- Document and disclose monitoring results and identify necessary corrective and preventive actions in the periodic monitoring reports, and make follow-up on these actions to ensure progress toward the desired outcomes;
- Make sure that the contractor implements the additional measures suggested by the SC and PIMU; and
- Report the status of ESMMP compliance to the Project Director, PIMU-PRMSC.

E. Supervisory Consultant (SC)

The roles and responsibilities of SC will be:

- To oversee the performance of the Contractor to make sure that the Contractor is complying with EMP;
- Discussing various environmental and social issues and environmental mitigation, enhancement and monitoring actions with all concerned personnel's;
- Inspect, supervise and monitor all the construction and allied activities related to the EMP for the project and oversee the performance of the Contractor to make sure that the Contractor is complying with EMP;
- Visiting construction sites including incomplete construction work sites, where there is no contractor's activities, active construction work sites, completed areas of work sites as well as ancillary sites such as borrow areas, quarries, asphalt and crusher sites, hot mix plant sites, construction camps and work shop areas to ensure contractors compliance with EMP stipulations and conditions of statutory bodies;

- Assisting contractor in all matters related to public contacts including public consultation pertaining to environmental and community issues;
- To organize periodic environmental training programs and workshops for the consultant's and contractor's staff;
- Periodic reporting as mentioned in EMP; and
- Suggest any additional mitigation measures (if required).

F. Construction Contractor (CC)

Site Environmental and Social Expert of contractor will carry out the implementation of the mitigation measures at construction site. Contractor will be bound through contract documents to appoint the Site Environmental and Social Expert with relevant educational background and experience. The responsibilities of ESE of Contractor are as follows:

- ESE of contractor will be responsible for Implementation of the mitigation measures at construction site;
- ESE of contractor will prepare Site Specific Environmental and Management Plan (SSEMP) including Evacuation Plan, HSE Management Plan, Material Transportation Plan, Traffic Management Plan, Emergency Response Plan, Monitoring Plan, and asphalt and batching plant area plans, and will submit all the plans to the SC.
- ESE of contractor will be responsible for the implementation of EMP and to take effective measures against corrective actions plan;
- ESE will prepare the monthly compliance and monitoring reports as per schedule and will submit it to the SC;
- Provision of proper Personal Protective Equipment's (PPEs) to the workers and train them for their proper use;
- ESE will conduct the environmental, health and safety trainings for the staff and labors; and
- The Contractor shall submit the Code of Conduct that will apply to all of the contractor's staff.
- The contractor shall submit an outline of how the Code of Conduct will be implemented. The aspects to be addressed include:
 - Ensure compliance with applicable environment, health and safety standards and procedures associated with risks of Project activities;
 - Ensure compliance with all acquired approvals, applicable to the proposed Project;
 - Ensure protection of local community (including vulnerable and disable assemblies), and the Contractor's staff, sub-contractors and daily wage workers;
 - Ensure employment of fulltime security guards, and necessary security measures and instruments (CCTV) at site;
 - Ensure provision of adequately stocked first aid kit at site for dealing with accidental injuries, and natural hazards;
 - Prohibit use of illegal items such as weapons, alcohol and drugs at site;
 - Ensure that Project property is protected against vandalism, theft, and noxious activity;

A. Environmental & Social Experts at Tehsil Office

The Tehsil Office will be responsible for:

- Monitoring of environmental compliance in close liaison with the SC;
- Reporting to ESC-PRMSC regarding compliance status;
- Identifying gaps in the implementation of ESMP and support the Contractor in rectifying the gaps.

B. Design Consultant (DC)

The DC will be responsible for:

- Preparation of environmental responsive design;
- Incorporation of technical design features in consideration of baseline environmental features;
- Designing of components based on futuristic and prospective needs of the project area.

7.3.2 Institutional Arrangement for Implementation of ESMMP by PIMU-PRMSC during O&M Phase

- The proposed Project will be administrated by PRMSC during the O&M phase. PRMSC has established District Support & Monitoring Department to monitor the development works of every district and for technical support for District Government. Therefore; it is suggested that the Project Director of the proposed Project shall depute / hire Environment and Social Expert through District Support & Monitoring Department to monitor and implement EMP during operation phase. The specific responsibilities of Environment and Social Expert are as follows:
 - Coordinating with the operational staff working under the Regional General Manager and Project Director to monitor environmental compliance during operation phase;
 - Advising on, and monitoring tree plantations along the road alignment as suggested in EMP;
 - Reporting on the progress of environmental compliance to the Project Director and EPA-Punjab;
 - Assess and propose mitigation measures for unforeseen long-term environmental and social impacts of operation; and
 - Sustaining a working partnership among the PRMSC, EPA-Punjab, Agriculture departments to ensure compliance of EMP during operation phase.

7.4 Reporting

The contractor will prepare and submit monthly monitoring reports for compliance of implementation to the supervision consultant (SC) environmental team.

The distribution of periodic reports is given in **Table 7.1**.

Table 7.1: Distribution of Periodic Reports

Report	Prepared by	Reviewed by	Distribution
Monthly	Contractor	Reviewed by PIMU-Environmental Unit; PRSWSSP	The Engineer and PRMSC and The World Bank
Quarterly	Contractor	Reviewed by PIMU-Environmental Unit; PRSWSSP	The Engineer, PRMSC and The World Bank
Annual	Contractor	Reviewed by PIMU-Environmental Unit; PRSWSSP	The Engineer, PRMSC and The World Bank
Final	Contractor	Reviewed by PIMU-Environmental Unit; PRSWSSP	The Engineer, PRMSC and The World Bank

7.5 Non-Compliance with the ESMMP

The implementation of the proposed ESMMP involves inputs from various functionaries as discussed earlier. The contractor will be primarily responsible for ensuring the implementation of the mitigation measures proposed in the ESMMP, which will be part of the contract documents. The provision of the environmental mitigation cost will be made in the total cost of the project. However, if the contractor fails to comply with the implementation of ESMMP and submission of the monthly compliance reports, deductions will be made from the payments to the Contractor claimed under the heads of environmental components.

7.6 Contractors ESMMP

The contractor will prepare a site-specific Contractor's ESMP (C-ESMP) based on the current ESMP and will get it approved by PIMU-PRMSC before the start of work. This will ensure the implementation of the ESMP based on the site conditions at the time of execution, by the contractor.

The C-ESMP will include the following sub-plans:

- Traffic management plan,
- OHS plan,
- Pollution prevention plan,
- Camp management plan

7.7 Inclusion of ESMMP in Bidding/ Contract Documents

The present ESMP will be included in the bidding/ contract documents and their implementation will be contractual binding for the contractors.

7.8 Environmental and Social Monitoring Plan

Monitoring will be carried out to ensure that the mitigation plans are regularly and effectively implemented. It will be performed at three levels. At the PIMU level, the ESC will do ESMMP monitoring to ensure that the mitigation plans are being effectively implemented. The environmental engineer of the Supervision Consultant will regularly monitor the ESMMP implementation by the contractor. At the contractor's level, the environmental monitoring checklist will be filled on daily basis by their environmental manager and countersigned by the environmental engineer (EE) of the Supervision Consultant.

Table 7.2 outlines the parameters that will be monitored, the expected frequencies of monitoring, and the responsible agency for monitoring. The Environmental Monitoring checklist is attached as **Annex-XIV**.

Sr. No.	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Responsibility		Monitoring Frequency	Cost and Source of Funds
			Implementation of mitigation measures	Monitoring		
1	Land acquisition and resettlement /Social Acceptability	- The subprojects will be established on the land owned by community or Government land - Community land will be acquired through VLD procedure. If VLD will not be possible, the RPF as part of this report will be applied. - Complete documentation will be maintained for VLD. - Valuation and compensation of affected assets of community should be in line with RPF/Sub- projects ARAPs and considered before the field activities. - Community consultations will be carried out before establishing the sites. - Decision Making through grass root consultation & proper document at each step to provide social acceptability and avoidance of elite capture.	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	Once the design is finalized	Government funding based on the instrument prepared.
3	Disturbance/damage to existing utilities on the sites (electric poles and wires, water lines within proposed project sites)	Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during construction phase	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	During site survey and design	Part of project cost

		- Conduct detailed site surveys with the construction drawings and discuss with the respective agencies during the construction phase before ground clearance; and - Require construction contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services. (This will be ensured that prior information to communities about potential disruption has been communicated).				
4	Impact on Community Infrastructure due to demolition of structures along alignment	- Restoration or relocation of affected infrastructures. - Information signboard will be placed (Such as School area, Speed limit, drive slowly)	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	During course of project	Contractor will be responsible to restore the private infrastructure
5	Sewer network – contamination to water supply or water bodies, leak, block or overflow	- Limit the sewer depth where possible. - Sewers shall be laid away from water supply lines and drains (at least 1 m, wherever possible); - Where possible, the sewer line should be laid deeper than the water pipeline (the difference between top of the sewer and bottom of water pipeline should be at least 300 mm) - In unavoidable, where sewers are to be laid close to storm water drains or canals or natural streams,	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	Before & during execution of work	Part of project cost

		appropriate pipe material shall be selected (stoneware pipes shall be avoided) • For shallower sewers, use small inspection chambers in lieu of manholes; • Design manhole covers to withstand anticipated loads & ensure that the covers can be readily replace if broken to minimize silt/garbage entry • Establish routine maintenance Project, including: regular cleaning of sewer lines to remove grease, grit, and other debris that may lead to sewer backups. Cleaning should be conducted more frequently for problem areas. • Inspection of the condition of sanitary sewer structures and identifying areas that need repair or maintenance. Items to note may include cracked/deteriorating pipes; leaking joints or seals at manhole; frequent line blockages; lines that generally flow at or near capacity; and suspected infiltration or exfiltration; and • Monitoring of sewer flow to identify potential inflows and outflows • Conduct repairs prioritized based on the nature and severity of the				
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		problem. • Immediate clearing of blockage or repair is warranted where an overflow is currently occurring or for urgent problems that may cause an imminent overflow (e.g. pump station failures, sewer line ruptures, or sewer line blockages); • Review previous sewer maintenance records to help identify “hot spots” or areas with frequent maintenance problems and locations of potential system failure, and conduct preventative maintenance, rehabilitation, or replacement of lines as needed; • When a spill, leak, and/or overflow occurs, keep sewage from entering the storm drain system by covering or blocking storm drain inlets or by containing and diverting the sewage away from open channels and other storm drain facilities (using sandbags, inflatable dams, etc.). Remove the sewage using vacuum equipment or use other measures to divert it back to the sanitary sewer system.				
6	Dust and emissions from construction activity may deteriorate air quality	• Tractor loads should be covered with anysuitable material. • Construction sites including soil piles should be fenced to avoid	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	Quarterly	Nil

		material escape, generation of dust and access to children • Soil and temporary soil piles should be covered or sprayed with water if generating dust. • All the vehicles deployed for material movement shall be spill proof to the extent possible. • Equipment/vehicles deployed for construction activities shall be monitored regularly • Ambient air quality shall be monitored				
7	High noisy construction activities may have adverse impacts on sensitive receptors and structures	• Construction work shall be limited to day light hours (6 AM to 6 PM). • Provide prior information to the local public about the work schedule; • Ensure that there are no old and sensitive buildings that may come under risk due to the use of pneumatic drills; if there is risk, cut the rocks manually by chiselling; • Minimize noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and portable street barriers reduces the sound impact to surrounding sensitive receptor; and	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	Quarterly	Nil

		Monitor noise level, quarterly, maintain maximum sound levels not exceeding 80 decibels (dbA) when measured at a distance of 10m or more from the receptor				
8	Soil and Water Contamination	- The dumpers and waste vehicles shall be covered properly; no waste should scattered out from the vehicles. The floor of the facility shall have thick cover to separate waste from the soil - Rain water shall be contained in pit and after treatment shall be used for sprinkling onto the roads, and irrigation purposes. Septic tanks are proposed for initial treatment of sewage then the treated water will be used for irrigation purposes.	Contractor and Consultant Design team	Consultant and Environmental/Water Quality Officers under SDU-TO		
9	Due to contaminated runoff from construction areas in monsoon	- Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets - Stockpiles shall be provided with temporary bunds - Prioritize re-use of excess spoils and materials in the construction works. If spoils will be disposed, consult with Implementing Agency on designated disposal areas - Install temporary silt traps or sedimentation basins along the drainage leading to the water	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	During construction	Nil

		bodies Place storage areas for fuels and lubricants away from any drainage leading to water bodies				
10	Impacts due to excess excavated earth, excess construction materials, solid waste etc.	- Proper disposal of surplus / excavated earth. And also efforts to minimize the quantity of surplus earth by better planning to use this earth for embankment /depression filling etc. Maintain PPE (helmet, gloves, boots, etc.) details for each type of work - Details of materials at each site (type & quantity) - Record of Construction waste/debris generated (details & quantity) - Detail the sequence of work process (step-by-step) including specific details of each work - Contractor's supervision & management arrangements for the work - For Emergency: Designate (i) responsible person on site, and (ii) first aider - Typical site layout plan including pipe trenching, placement of material, excavated earth, barricading etc. - The excavated soil, placed sprayed with water if generating dust.	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	During construction	Nil

		- The following should be included in the site layout plan: Provide barricading/security personnel at the site to prevent entry/trespassing of pedestrian/vehicles into the work zone. - Location of temporary stockpiles and provision of bunds - Separation of stockpiles areas with workers/vehicle movement paths to avoid disturbing the stockpiled soil				
11	Solid Waste from toilets during construction and operation	- Construction sites should be equipped with temporary refuse bins. - Disposal of solid waste will be carried out in a manner that does not negatively affect the drinking water sources, cultivation fields, irrigation channels, natural drainage paths, and the existing waste management system in the area, local routes, and general aesthetic value of the area. - Wastes should be routinely collected from the designated area and disposed at waste disposal facilities.	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	During construction of toilets	An estimated budget for ESMP implementation is given
12	Leachate generation from solid waste at the site	Designs standards for Leachate control system as per requirements shall be reviewed prior to the construction of facility. Runoff away	Consultant Design team	Consultant and Environmental/Water Quality Officers under SDU-TO	During operation	

		from the site will be helpful to limit leachate generation and reduces infiltration. - Waste should be properly covered at the site and maximum effort shall bring in to practice to avoid contact with precipitation. - Vegetative cover around also plays significant role in leachate production control by limiting infiltration and reduce percolation.				
13	Odor problems due to solid waste at the site	Odor can be controlled by following measures: - Layering daily soil cover on regular basis in order to prevent odors and vector problems. Also, odor filter (bio-filters) shall be installed at the facility to absorb the bad smell. In addition to that, proper design and operation of gas management system shall be recommended. - The indigenous and fancy plants shall be planted alongside the waste processing facility and in the surrounding to reduce the odor and increase its aesthetic value.	Consultant Design team	Consultant and Environmental/Water Quality Officers under SDU-TO		To be determined in final design – included in cost estimates
14	Visual and Aesthetic Impacts	- The boundary walls shall be constructed alongside the facility to avoid eye soaring impacts. - The waste transfer vehicles shall be properly covered. - The indigenous and fancy plants	Consultant Design team	Consultant and Environmental/Water Quality Officers under SDU-TO	During operation	Included in EMP cost

		shall be planted alongside the waste processing facility to reduce the odor and increase its aesthetic value.				
15	Pit/septic tank Sludge Management	- Composting of biodegradable waste will be considered and adopted. - Sludge after emptying the tanks/pits should be properly disposed at proper location and left for degradation. - Sludge will not be disposed of into open land	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	During the course of project	
16	Waste Sludge	The waste water treatment will generate a considerable amount of waste in the form of sludge. This sludge must be disposed of carefully. Nevertheless, depending on the quality of the sludge, it could be used as fertilizer.	Consultant and contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	Post Operation phase	
17	Damage to drinking water supply line /deterioration of water quality due to mixing of waste water	- Engineering controls - Consultation with communities to know the status of drinking water supply schemes - Public consultation before time and supplementary arrangements if water supply has to be stopped for certain time period - Water quality analysis before during and after construction activities	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	During operation	Water quality analysis will be carried out in Punjab EPACertified labs
18	Temporary disturbances in water supply	Timely Public Consultation	Contractor	Consultant and Environmental/Water	During the course of	TCs will have alternate

		- Water users of that area will be informed timely about the temporary interruptions in water supply - If water supply has to discontinue for more than 24 hours then alternate arrangements of safe water supply should be made		Quality Officers under SDU-TO	project	arrangements of water supply tanks
19	Odor- construction and operation of the sludge pond may increase levels of exhaust and suspended particulate	- The use of a digesting treatment before disposal can considerably lessen these odors. - However, there is no natural or artificial structure to prevent this diffusion, and the effect may be alleviated to some extent by careful alignment. - Exhaust and suspended particulate may be lessened if methane gas is recovered from the sludge and used for energy generation	Consultant Design team	Consultant and Environmental/Water Quality Officers under SDU-TO	Before Construction	To be determined in final design – included in cost estimates
20	Air emissions from vehicles	It is recommended to use well-tuned vehicles and quality lubricants must be used. All waste transportation vehicles shall be regularly maintained to ensure that pollution levels are in conformity to the PEQs defined by the EPA.	Consultant Design team	Consultant and Environmental/Water Quality Officers under SDU-TO	Before & during Construction	To be determined in final design – included in cost estimates
21	Labor influx related issues also including SEA/SH and management of COVID-19 during	- SOPs for COVID-19 will be followed - Training of labor on these aspects - ESF/Safeguards Interim	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	During construction	

	construction					
22	Child labor & minimum wages	Standard clause in the contracts related to child labor explicit prohibitions, etc will be provided and contractor will ensure compliance to the contractual provisions on child labor, equal wages for similar work explicit prohibitions, etc	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	During construction	
23	Impacts on Women, Children, and Vulnerable Groups	It will be ensured that the subprojects do not have any negative impacts on women, children and vulnerable groups. Gender framework will be implemented throughout the project, moreover stakeholder consultation will be implemented to mitigate the impacts at each step. For community toilets, ramps for people in disabilities should be provided	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	Before and during construction	Nil
24	Occupational Health and Safety	• Providing basic medical training to specified work staff and basic medical service and supplies to workers; • Training of workers in construction safety procedures, environmental awareness, equipping all construction workers with safety boots, helmets, gloves and protective masks, goggles, shields and monitoring their proper and sustained usage; • Contractor will ensure the provision of medicines, first aid kits, ambulance etc. at the camp site;	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	During construction of toilets	Nil

		• Contractors will instruct their staff to use Personnel Protective Equipment (PPE) (e.g., wire containment, displaying warning signs along the work site, communicating advance warnings to mats) to enhance the safety; and • Safety lookouts will be built to prevent people and vehicles from passing at the time of hot or cold work; and • An emergency management plan must be devised by the contractor in close coordination with the provincial emergency services • The contractor will be required to strictly follow WB EHS Guidelines. • In the current scenario of COVID-19, GoPunjab Primary and Secondary Healthcare Department has issued Health Safety SOPs for construction workers for COVID-19 and they will be used during pandemic situation • The construction contracts will include appropriate clauses to protect environment and public health. Avoid stagnation of water and initiate drainage/cleanup of stagnant water. • Include procedures for documenting and reporting				
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		accidents, diseases, and incidents.				
25	Disruption to traffic flow and sensitive areas and receptors	- Contractor should provide the construction schedule to staff - Sequencing of activities in a way to avoid excavation in adjacent streets so that alternate passages are available to the people - Providing residents with advance warning of construction activities - Avoiding excavation of trenches at junctions during peak-hours - Backfilling of the trenches at the junctions in minimum possible time - Construction work camps shall be located at least 200 m from residential areas - Do not consider residential areas; for stockpiling the waste/surplus soil.	Contractor	Consultant and Environmental/Water Quality Officers under SDU-TO	Before & During construction	

7.9 Gender Action Plan

A Gender Action Plan (GAP) is a systematic framework for ensuring that women participate in and benefit from development programs and projects. The GAP for PRSWSS has been developed in adherence to World Bank Gender and Development Policy Framework, OP/BP 4.20. The World Bank recognizes that gender issues are important dimensions of its poverty reduction, economic growth, human well-being, and development effectiveness agenda. The objective of a Gender Action Plan (GAP) is to ensure the mainstreaming of gender issues and concerns into all aspects of the project throughout the project lifecycle through detailed planning, implementation, monitoring, and evaluation activities.

The GAP will safeguard the interest of the community women adjacent to the project sites; promote their participation in project planning and activities (if applicable) and ensure safer and healthier living conditions for them. It will also contain actions that will be adhered to by all the agencies (Contractors, Sub-Contractors) involved in the implementation of the project during the project lifecycle along with the project proponent.

7.9.1 Objectives of Gender Action Plan

The GAP illustrates the specific activities to address gender-specific concerns and social impacts associated with the proposed project. The objectives of the GAP are as follows:

- To undertake preparatory work to address gender issues in the project;
- To include special features in the project design to address gender impacts;
- To promote women's participation in the project;
- To maximize women's access to project benefits;
- To ensure tangible benefits to women;
- To minimize the higher vulnerability of women arising due to the project activities like securing land, and security concerns during construction;
- To propose specific measures to enable the affected women-especially those who are poor/vulnerable, to cope with project impacts;
- To ensure implementation of the gender design elements and gender monitoring and evaluation.

Table 7.2: Gender Action Plan

Issues	Measures	Responsible Agency	Monitoring Indicators
Pre-Construction Phase			
Announcement for Employment Opportunities	- Announce employment opportunities and recruitment notices widely, targeted at affected women as well as men. - Encourage women's participation and provide pieces of training regarding employment opportunities	CC and PIMU-PRMSC	- Notice of employment opportunities by the distribution of brochures and pamphlets/leaflets, outside the construction site. - As most of the females are uneducated, announcements should be made in local mosques as well consultative meetings may be convened for the hiring of the female workforce.
Communication/ Consultations and Information Dissemination	- Information dissemination to the community including female members through continuous consultative meetings and distribution of brochures and pamphlets/leaflets. - Involve the females in the regular consultative process of the project.	PIMU-PRMSC	Lack of awareness among females about the project impacts and its mitigation measures.
Construction Phase			
Women Workforce	Preference may be given to women from project-affected families to work as unskilled workers/ labor (wherever feasible) during the construction phase and they receive equal wages for the work	CC and PIMU-PRMSC	Less labor force participation of women than men
Equal Wage	Ensure equal pay for equal work of women and men for all construction and maintenance work	CC and PIMU-PRMSC	Women doing the same work as men but receive unequal wages (reflected in payrolls)
Restrictions on Women's Mobility	Identify barriers to women's mobility and take reforms to fix those barriers.	PIMU-PRMSC	Unrestricted movement of females. They could not go outside without male or along with another woman

Issues	Measures	Responsible Agency	Monitoring Indicators
An influx of Labor, especially if from outside the project area.	- Awareness training for community and Labor. - Referrals to prevention and treatment services - Strengthen prevention in contractor documents - create or strengthen SEA/SH referral helplines	Contractor	Sexual Harassment (SH) and Sexual Exploitation and Abuse (SEA) issues reported as females do not feel secure going anywhere.
Safety and Security concerns	- Labor camps to be established away from the residential areas - Presence of security personnel on the project site during the execution	Contractor	Safety and security concerns of females during construction time
Gender Sensitive Grievance Redress Mechanism and Complaints Handling	- Develop Gender-sensitive GRM to address all complaints of the local females - Awareness about the Gender-sensitive GRM and complaint-handling process through consultative meetings, distribution of pamphlets, and mobile penetration. - Ensure that the existing GRM is accessible to the local community is gender-sensitive, and has SEA/SH Protocols - Carrying out project implementation activities in consultation with the community/ local women to avoid peak hours working activities of women. - There should be female staff to interact with local females. - Training – capacity development for gender-inclusive project design	PIMU-PRMSC	- Complaints about the disorder of pressing needs of women/ local community relating to the project that may affect women's mobility during the construction activities - Difficulties in having access to social amenities - Disturbance in privacy during construction activities.
Through the Project Lifecycle			
Women in Decision Making	Women should be trained and empowered to be part of decision-making processes – their understanding and knowledge about their households and business affairs.	PIMU-PRMSC to facilitate training with help of any local NGO/ CBO	- No decision-making regarding households and business affairs. - No freedom to decide on career or

Issues	Measures	Responsible Agency	Monitoring Indicators
			marriages • Less participation in decision-making of different matters
Area Safety	• Support the relevant departments in enhancing the safety and security of women in public spaces, focusing on gender-based violence, harassment issues, and female vulnerability and risk.	PIMU-PRMSC	• Reporting of GBV and harassment issues
Lack of Security	• Security arrangements in liaison with line departments	CC and PIMU-PRMSC	Safety and security concerns of females
Need for Skill Training and Capacity Building	• Improve and develop practical skills and opportunities for women population to enhance their participation in earning the livelihoods/businesses	PIMU-PRMSC to facilitate training with help of any local NGO/ CBOs	• Deficiency of knowledge about skill training • Less access to adequate training • Less representation of women in activities requiring different skills
Educational Attainment	• Spread awareness to provide education to young girls • Support reforms aimed at improving the education system and increasing capital accumulation with links to skills acquisition and school to-work transition	PIMU-PRMSC	• The low trend of educational attainment of young girls • Lack of emphasis in the educational system on the skills required for effective and sustainable school-to-work transition
Gender Discrimination in Educational Attainment	• Identify barriers and take reforms for removing gender discrimination in the education system	PIMU-PRMSC	• Young girls are often taken out of school to share the family responsibilities such as caring for younger siblings, etc. • If a family has to choose between educating a son or a daughter because of financial restrictions, typically the son is chosen. Negative parental attitudes towards educating daughters can also be a barrier to a

Issues	Measures	Responsible Agency	Monitoring Indicators
			girl's education. • Many parents view educating sons as an investment because the sons will be responsible for caring for aging parents
Poor Transportation System	• Transport infrastructure should be provided for girls to fulfill certain all social needs • Support reforms aimed to provide better access to all means of transport •	PIMU-PRMSC	• Girls in rural areas do not have adequate public transport to get to secondary school • Access and mobility are one of the key problems faced by the women
Child, Early and Forced Marriages	• Interpretation and enforcement of legislations/laws exist to address child, early and forced marriages • Training to law enforcement on gender discrimination and violence against women, including investigations into child marriages; • Implementing support programs that empower girls at risk or who are currently in child marriages. • Increasing access to education for girls, including by providing incentives for families to keep their daughters in school • Enhance economic opportunities for girls and their families through employment options and supports • Increasing and improving access to reproductive healthcare for all girls and women in rural areas • Providing continuing formal education and vocational training opportunities for married girls and women.	PIMU-PRMSC	• A huge proportion of young girls are forced to marry under the age of 18 due to socioeconomic and cultural reasons.
Unavailability of Mother Child Care	• Reforms and policies to improve maternal and	PIMU-PRMSC	• Lack of Mother-child care centers

Issues	Measures	Responsible Agency	Monitoring Indicators
Centers and other Medical Facilities	child undernutrition, increase education quality mother-child care health and nutrition, and other medical facilities. Appointment and availability of doctors in the communities to treat mother-child care and other health-related issues;		and other medical institutions • Not having enough money to afford private doctors and their costly treatments in the big cities
Occurrence of Diseases	• Support health institutions to take reforms for improving health quality and provide a safe and healthy environment	PIMU-PRMSC	• Reporting of various diseases like hepatitis, diarrhea, skin issues, cough, etc. due to the usage of brackish water, improper sewerage, and sanitation system.
Menstrual Hygiene Awareness	• Built awareness programs and generate data to aware women of menstrual hygiene. • Conduct pieces of training using female trainers • Encourage women's participation in awareness programs • An adequate water supply is necessary to maintain a hygienic environment.	PIMU-PRMSC	• Females were less aware of menstrual hygiene. • The majority of women use pieces of cloth because of less awareness about sanitary materials. • Females have less money to buy the sanitary pads
Customer Service Centers	• Provision of Customer Service Centers for the registration of complaints/grievances regarding water and sanitation-related issues. • Hiring of female staff to interact with local females	PIMU-PRMSC	• Inadequate Customer Service Centers in the rural area
Gender based Violence / Domestic Violence	• Provision in GRM for GBV related issues • Agencies can direct resources toward programs best suited to their communities. • Increased awareness can be spread to communities and service providers alike about the diverse ways that GBV may be experienced, particularly at various intersections of social oppression and marginalization	PIMU-PRMSC and local NGOs/ CBOs	• Reporting of GBV related issues
Reporting of Sexual Harassment (SH) and Sexual Exploitation	• Harassment cases should be properly addressed and reported through GRM	PIMU-PRMSC and local NGOs/ CBOs	• Sexual Harassment (SH) and Sexual Exploitation

Issues	Measures	Responsible Agency	Monitoring Indicators
and Abuse (SEA) issues	• Awareness training for community and Labor. • Referrals to prevention and treatment services • Strengthen Prevention in Contractor Documents • Create or Strengthen SEA/SH • Referral Helplines		• and Abuse (SEA) issues reported as females do not feel secure to go anywhere.

7.10 Grievance Redressal Mechanism (GRM)

7.1 Overview and Scope

The Grievance Redressal Mechanism proposed will be applicable throughout the course of project during the entire project implementation and will cater to both the directly and indirectly affected populations. This GRM is proposed as a requirement of WB GRM policy to address the public grievances regarding environmental and social issues that may emerge during and after PRSWSSP sub-projects implementation. It will also cater to manage any disconnects that emerge from the field level and that has significant implications for effective implementation of the sub-project interventions.

In an effort to deter fraud and corruption, the use of a dedicated mobile application has been proposed for reporting of grievances from field level to district and provincial headquarters. This will not only provide a coherent system of checks and balances but will also enable swift redressal and effective monitoring of complaints.

The PIMU at LG&CDD level will serve as the Secretariat for the Grievance Redressal Committee (GRC- Directorate) that will be responsible for providing oversight on the entire GRM process at a strategic level and monitoring of complaints management.

Water supply & sanitation are imperative daily basis facilities. Due to, continuous use and all-time requirement, there is tendency of routine O & M requirement of the facilities. O&M will be needed as soon as project interventions are completed in village. The Grievance Redress Mechanism (GRM) will be consistent with the Component 4 Project Management and Monitoring sub component 4.2 Grievance Redressal Model is part of Project of PRSWSSP. Project activities may cause social friction if Projects do not have an effective GRM.

7.2 Objectives of Grievance Redress Mechanism

The Grievance Redressal Mechanism (GRM) will be consistent with the requirements of the World Bank safeguard policies to ensure mitigation of community concerns, risk management, and maximization of environmental and social benefits. The overall objective of the GRM is therefore to provide a robust system of procedures and processes that provides for transparent and rapid resolution of concerns and complaints identified at the village level.

The GRM will be accessible to diverse members of the community, including women, senior citizens and other vulnerable groups. Culturally-appropriate communication mechanisms will be used at all sub-project sites both to spread awareness regarding the GRM process as well as complaints management

7.3 Communication & Awareness

The final processes and procedures for the GRM will be translated in to local languages and disseminated at all sub-project locations. These shall be made available (in both leaflet and poster format) to all sub- project locations through the offices of each SDU. Dedicated male

and female Grievance Focal Persons for each sub-project location will play an instrumental role in spreading awareness regarding the GRM, including the use of information technology for reporting and monitoring of complaints.

7.4 Records and Monitoring

An electronic database will be maintained at the PIMU that will provide a summary of complaints received and mitigations. The dedicated mobile application that will be used to communicate grievances will provide the basis for recording complaints both at the provincial and district levels.

Apart from the electronic database that will be maintained, a manual register of all complaints and actions taken will be maintained by the Environmental and Social Focal Persons for each District at the Office of the SDU-TOs and a manual register of all day to day complaints and their grievance redressal details will be maintained by VOs their office

7.5 Proposed Institutional Mechanisms

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

Tehsil Level-Public Complaints Center (PCC) in SDU-TO will be responsible to receive, log, and resolve complaints at site and in Village level. Complainant would be able to launch complaint on a toll free number, app, message or call.

Teir 1: village level –Panchayt/Village Councils made under Punjab Local Government (Amendment) Ordinance 2021 will act as the 1st tier of GRM at village community level.

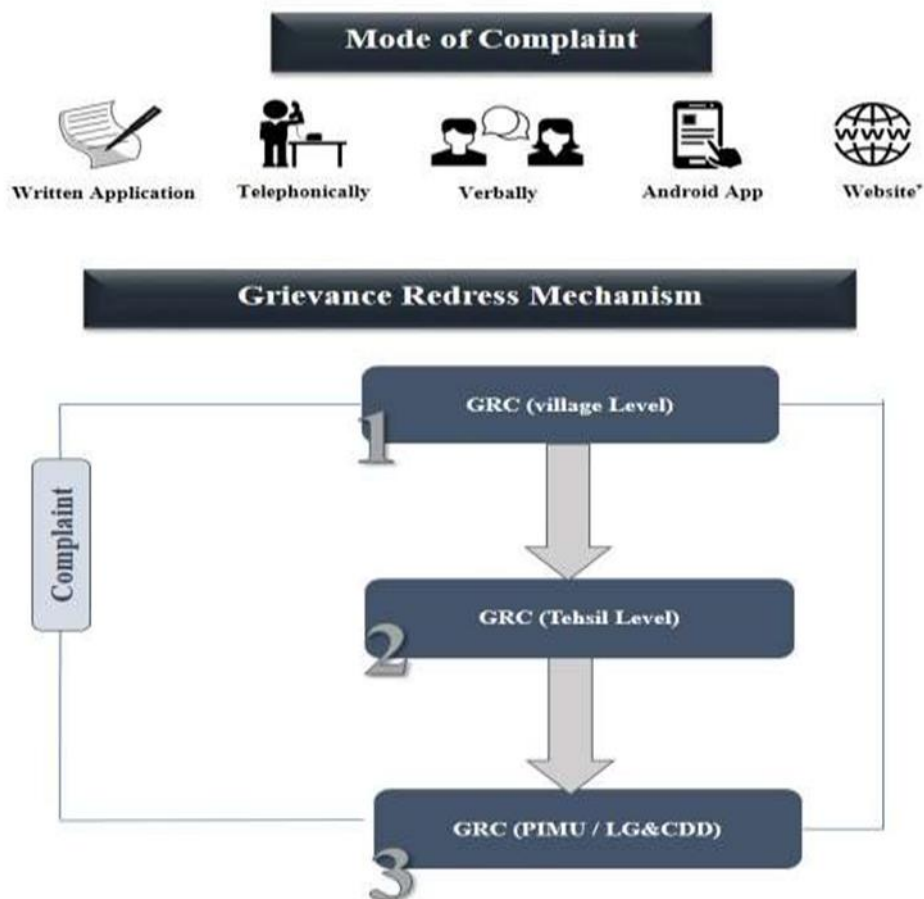
Teir 2: Grievance Redress Committee (GRC-Tehsil Level) in SDU-TO will be established for each district that will manage GRM aspects for all sub-project locations in each district including decisions to be taken, actions and monitoring of complaints resolution at sub-project level.

Teir 3: PIMU Level-GRC at PMIU (LG&CDD) will be responsible to oversee the overall functions of the GRM at a strategic level including monthly review.

7.6 GRM Process Implementation

1. Through the envisaged system, complainant would be able to launch complaint on a toll free number, app, message or call. (GRM will be accepted the anonymous grievances)
2. Details of the complaints and the complainants will be entered in the system and a complaint number will be provided to the complainant through SMS.
3. A specific person will be designated to monitor the system and issue necessary instruction to relevant quarter for necessary action.
4. The GRM will provide an interface to complainants to check the status of their complaint
5. The system will bridge the gap between the masses and the service provider. Monitoring officers will precisely know the details of pending complaints in every SDU. Performance of the SDU could also be easily monitored through it.

6. The GRM will have a built-in escalation system for moving unresolved complaints to higher levels.



7.7 GRM Procedures and Timelines

The tracking and documenting of grievance resolutions will include the following elements:

- Tracking complainant(s) from subprojects sites (field and community level) to PIMU;
- Dedicated staff to update the database routinely;
- Promote transparency, publicize how complaints are being handled, and periodically evaluate the overall functioning of the mechanism;
- Processes for informing stakeholders about the status of a case; and
- Procedures to retrieve data for reporting purposes, including the periodic reports form Village and Tehsil and document into the monthly progress reports at PIMU.

GR (Village level) will be responsible to receive, log, and resolve complaints at village level. The Grievance Redress Committee at the village Panchayts will review and identify actions to be taken to address the complaints at its weekly meeting. If not resolved timely then complaint would be referred to GRC-Tehsil Level (SDU-TO) within 3 days after receiving.

GRC-SDU-TO will try to resolve the complaints in a satisfactory manner anyhow, If not satisfactorily resolved by the village panchayats/councils and Tehsil level, then the grievance will be referred for consideration by GRC at the PIMU/LG&CDD level within one week.

Every effort will be made to address or resolve grievances within the following fixed timelines, which will be an indicator against the performance of the handling system. Acknowledgement of a written submission will be issued to the complainant within three working days.

If the complainant is not satisfied, the complaint will have the option to seek redress through court of law.

7.8 Gender Sensitive Grievance Redress Mechanism

Project may cause:

- Complaint about disorder of pressing needs of women/ local community relating to the project that affect the mobility during the construction activities
- Difficulties in having access to social amenities
- Disturbance in privacy during construction activities.

These issues can be redressed as following:

- Awareness about the gender sensitive GRM and complaint handling process through consultative meetings, distribution of pamphlets and mobile penetration.
- Ensure that the existing GRM is accessible to the local community, is gender sensitive, and has SEA/SH Protocols.
- Carrying out project implementation activities in consultation with the community/ local women to avoid peak hours working activities of women.
- Training – capacity development for gender-inclusive project design and implementation

7.11 Institutional Capacity & Strengthening

In order to ensure that the ESMP provisions are implemented efficiently and effectively, training and capacity building/ strengthening of the implementing parties are required. Therefore, based on the assessment of the institutional capacities of the parties involved in the implementation of the ESMP, the following broad areas of capacity building/strengthening have been identified and recommended for effective implementation of the ESMP.

Table 7.5 shows the positions proposed for institutional strengthening for effective implementation of environmental and social mitigation measures along with their responsibilities.

7.12 Training Program

The environmental and social training will help to ensure that the requirements of the ESMP are clearly understood and followed by all project personnel. The primary responsibility of providing this training to all project personnel will be that of the contractor and ESC. The training will be provided to different professional groups separately such as managers, skilled personnel, unskilled labors, and camp staff. Capacity building will be aimed at strengthening the ESC, and operational staff in the field of environmental management and social development. **Table 7.7** provides detail of the training required for the implementation of ESMP during the construction and operational phase.

Table 7.3: Institutional Strengthening

Institutional Strengthening	Position	Scheduling (Months)	Responsibility
Contractor	Environmental/ HSE Expert	01 (Intermittent Input)	▪ Responsible for the overall implementation of ESMF processes and procedures in the light of WB policies and Guidelines and local policies and procedures; ▪ Closely follow up the integration of safeguard assessment information and inclusion of safeguards self-screening process at the project development and design stage; ▪ Provide technical support during proposal development, project design, appraisal process, and resource mobilization plan for the sub-projects in all locations; ▪ Undertake follow-up monitoring to ensure that proposed mitigation measures are implemented according to an agreed-upon environmental and social mitigation implementation plan; ▪ Closely provide assistance and design capacity building/training program for the overall implementation of ESMF from PIMU to village level and deliver capacity building training to the field teams to close knowledge/skill gaps and minimize the likelihood of risks happening to sub-projects; ▪ Ensure that appropriate environmental and social mitigation measures are proposed and met; ▪ Undertake to follow-up monitoring to ensure that proposed mitigation measures are implemented according to an agreed-upon environmental and social mitigation and implementation plan; ▪ At the PIMU level, maintain the record of all information, documents evidence, and reports including progress reports, TPV Reports, training reports, ESMPs, Screening Checklists, etc.; ▪ Closely work with SSS and Gender Specialists at the PIMU level and provide technical assistance and advice to the Environment/ Water Quality Officers based at SDU-TO

Institutional Strengthening	Position	Scheduling (Months)	Responsibility
	Social / Resettlement Expert	01 (Intermittent Input)	- Responsible for the overall implementation of social safeguard of ESMF and RPF and VLD processes and procedures in the light of WB policies and Guidelines and local policies and procedures; - Closely follow up the integration of safeguard assessment information and inclusion of safeguards self-screening process at the project development and design stage; - Provide technical support during proposal development, project design, appraisal process, and resource mobilization plan for the sub-projects in all locations; - Review all the E&S Screening checklists from social safeguards point of view and ensure the correct categorization of each subproject and visit the project sites for Resettlement Checklists (if required); - Overall responsible for the implementation of GRM and Public Disclosure of Information processes and procedures; - Undertake follow-up monitoring to ensure that proposed mitigation measures are implemented according to an agreed-upon mitigation and implementation plan Closely provide assistance and design capacity building/training program for the overall implementation of social safeguards and RPF from PIMU to village level and deliver capacity building training to the field teams to close knowledge/skill gaps and minimize the likelihood of risks to happen to sub-projects; - Ensure that appropriate social mitigation measures are proposed and met prepare SMPs either separately or integrated with ESMPs; - Undertake follow-up monitoring to ensure that proposed mitigation measures are implemented according to an agreed-upon social mitigation and implementation plan; - Assist PIMU in hiring consultants (if required for preparation of ARAPs); - At the PIMU level, maintain the record of all information, documents evidence and reports including progress reports, TPV Reports, training reports, SMPs/ ARAPs and Screening Checklists etc. - Closely work with ESS and Gender Specialists at PIMU level and SDU-TO team.

Institutional Strengthening	Position	Scheduling (Months)	Responsibility
	Gender Specialist	01 (Intermittent Input)	▪ Ensure implementation of World Bank Gender guidelines and policy; ▪ Provide direct technical assistance and guidance on women's economic empowerment to the PRSWSSP and its delivery partners; ▪ Support the development of tools, systems, processes and approaches that continuously improve technical excellence and impact in the area of transformative approaches to women's economic empowerment; ▪ Lead, coordinate, support, and/or conduct gender and power analyses, effectiveness and efficacy studies, appraisal, evaluation and needs assessments as required by the PRSWSSP; ▪ Assist with quantitative/qualitative assessments in targeted communities to assess effectiveness of interventions and impact; ▪ Support delivery partners to understand the role of gender equality and women's economic empowerment for the PRSWSSP impact groups; ▪ Ensure gender equality and women's economic empowerment criteria are well integrated into market systems approaches; ▪ Work closely with other technical specialists to integrate gender across all PRSWSSP components; ▪ Facilitate and support a strong learning and knowledge-sharing community around gender-transformative practices amongst delivery partners; ▪ Represent work being done in gender transformation and women's economic empowerment under the PRSWSSP in relevant internal and external forums.

Table 7.4: Institutional Training

Training Activity	Participants	Mode of Training	Training Content	Frequency	Amount (PKR)
Construction Phase (12 months)					
Environment Rules and Regulations	Contractor Staff	Presentation	Awareness & applicability of environmental code of practices	Once	200,000
Awareness regarding Covid-19 and other vector borne diseases	Contractor Staff	Presentation	Risk, Prevention and available treatment	Once	150,000
Waste Management	Contractor Staff	Lecture	Awareness associated with waste storage, collection and safe disposal	Once	150,000
Emergency Response	Contractor Staff	Workshop	Potential natural and other hazard/emergencies and dealing with emergency to minimize damage	Once	200,000
WB OPs & PEPA Regulations	Managerial Staff of Contractor	Lecture	Awareness on World Bank OPs, PEPA rules, guidelines, regulation and standards for satisfactory compliance	Once	150,000
Resettlement Related Issues	Contractor and ESC Staff of PIMU	Lecture	Awareness on OP 4.12 (Involuntary Resettlement)	Once	150,000
Community/ occupational health and safety	Contractor Staff	Lecture	Awareness on EHS Guidelines	Once	150,000

Gender related issues	Contractor Staff	Lecture	Awareness on gender inequalities/GBV OP 4.20	Once	150,000
Total					1,300,000

