PUNJAB MUNICIPAL SERVICES IMPROVEMENT PROJECT (PMSIP)

Environmental and Social Management Framework

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ACRONYMS

ASC	Amritsar Smart City
CPCB	Central Pollution Control Board
ES	Environmental Social
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental Social Standard
GRM	Grievance Redress Mechanism
HFL	Highest Flood Level
IA	Implementing Agency
LMP	Labour Management Plan
LSC	Ludhiana Smart City
MC	Municipal Corporation
MCA	Municipal Corporation of Amritsar
MCL	Municipal Corporation Ludhiana
MoEF&CC	Ministry of Environment Forest & Climate Change
MoU	Memorandum of Understanding
OHSR	Over Head Service Reservoirs
PIU	Project Implementation Unit
PMIDC	Punjab Municipal Infrastructure Development Corporation
PMSIP	Punjab Municipal Services Improvement Project
PMC	Project Management Consultant
PMU	Project Management Unit
RPF	Resettlement Policy Framework
RAP	Resettlement Action Plan
SDG	Sustainable Development Goals
SEP	Stakeholder Engagement Plan
SPCP	State Pollution Control Board
TOR	Terms of Reference
WB	World Bank
WTP	Water Treatment Plant

EXECUTIVE SUMMARY

ES1 Introduction

There is a huge demand and supply gap in urban water supply in Amritsar and Ludhiana. The drinking water supply systems in the two cities are based on ground water only which is exhausting the supply. Further a significant number of samples have been found to be contaminated with toxic heavy metals. The Government of Punjab (GoP) is planning to implement a water supply improvement project in these two cities of Punjab and has sought assistance from the International Bank for Reconstruction and Development (IBRD, also commonly known, and referred hereafter to, as the "World Bank").

This Environmental and Social Management Framework (ESMF) has been developed for the project to guide the project implementers and other key stakeholders in assessing and addressing the environmental and social (E&S) risks arising from the project. As per the guiding principles of the ESMF, all projects funded by the World Bank require the borrowers to – (a) achieve compliance with all applicable federal/national, state and local laws and regulations related to environmental and social matters; and (b) meet the requirements of the Environmental and Social Standards (ESS) outlined in the World Bank's Environmental and Social Framework (ESF). The ESMF is the key E&S risk management tool used by borrowers to identify, assess, mitigate and report on project E&S risks, impacts and mitigation measures ant the effectiveness of their implementation.

This document is intended to serve as the ESMF for the Punjab Municipal Services Improvement Project (hereafter referred to as PMSIP).

ES2 Project Details

PUGSWIP seeks to improve access and quality of piped water supply to the residents of the cities of Ludhiana and Amritsar. In addition, the project also aims to strengthen capacities and improve the performance of the two urban local bodies (ULBs) - the Municipal Corporation of Ludhiana (MCL) and the Municipal Corporation of Amritsar (MCA) – responsible for water supply services in the two cities. The Project Development Objective (PDO) is, *"to strengthen urban water supply system to bridge the gap between demand & supply in the selected cities, Ludhiana & Amritsar."*

PMSIP has Four components:

Component 1: Strengthening urban service delivery systems
- Sub-Component 1a: Strengthening water service management
- Sub-Component 1b: Strengthening urban governance and finance systems

Component 2: Improving water supply infrastructure

- Component 3. COVID-19 Crisis Response

Component 4: Project management

Under Component 2, the project will invest in a water treatment plant and core infrastructure (main clear water tanks, transmission lines and overhead storage reservoirs (OHSRs) in both Amritsar and Ludhiana. Under Component 3 the project will finance short- to medium-term non-medical interventions to address the COVID 19 crisis, among them, upgrading or rehabilitating vital health/community infrastructure or amenities, provision and/or coordination of local services — both infrastructure and social services — that cater to COVID-19 response especially targeting poor and vulnerable households and communities, strengthening local-level disaster response systems and developing disaster response plans, communication campaigns and awareness building programs, and capacity building of local public officials and civic entities.

The Punjab Municipal Infrastructure Development Corporation (PMIDC) is the nodal agency responsible for the overall management of the project. The two urban local bodies, MCL and MCA will implement the project in the cities of Ludhiana and Amritsar respectively and are the Project Implementing Units (PIUs) for the project.
A detailed analysis of alternatives, which will systematically compare feasible alternatives to the proposed project site, technology, design, and operation--including the "without project" situation--in terms of their potential environmental and social impacts and risks; is to be conducted for the ESIA.

ES3 E&S Risk Classification of PMSIP

While Components 1 and 3 of the project have limited or no E&S risks, Component 2 of the project involves major civil works such as intake water point development works, construction of water treatment plants (including pumping stations), laying of clean water transmission pipelines ES4 and construction of new overhead tanks (OHTs) and repairs of existing OHTs in both the cities. Given the nature of the activities in Component 2 and their associated E&S impacts, PMSIP has been classified as a “substantial” for environmental impacts and risks and “high” for social impacts and risks.
The Risk rating has been arrived at based on the potential impacts the project Component 2 (While Components 1 and 3 of the proposed project have limited or no environmental risks) is likely to have. The adverse environmental impacts related to Component 2 activities include: (i) sludgefrom the WTPs during operation phase; (ii) emission of dust, noise, debris, waste products during construction; and (iii) health and safety of workers and traffic disruption during construction of WTPs and OHSRs. All these adverse potential risks can be effectively prevented, mitigated, or minimized on-site in a predictable manner through good engineering design. Considering that the impacts are reversible, localized and temporary, the environmental risk of the project is considered as "Substantial.
For considering the risk rating for Social and considering the requirments of the project, including acquisation of large private land parcels (40 and 50 acres of farm land is required in Amritsar and Ludihiana cities respectively) are anticipated in the project for construction of Water treatment Plants for both cities, with potential land and livelihood related impacts. In addition, civil works including large scale road cutting/Right of Way (RoW) for laying the transmission lines through the dense-congested urban localities is likely to temporarily lead to economic displacement of street vendors, hawkers, roadside establishments with loss of income, apart from impacts on squatters and encroachers who occupy stretches of public land/RoW. High risk is also anticipated from labour influx (which has the potential to cause GVB), downstream water imapcts/conflicts due to drawl, low implementation experience and capacility of client, and that the water transmission route which passes through congested and densely populated areas, settlements, commercial areas. There are a number of slums, and temporary hawkers, encroachers, squatters whose means and livelihood will be impacted. The influx of labour is likely to affect safety of the communities and increase the potentials for GBV. Considering these facts the Social Risk Rating is High.
Overall the Component 2 is High

Potential impacts on down stream water use: For Amritsar, raw water will be abstracted from the Upper Bari Doab Canal (UBDC), which has an authorized discharge of 9000 cusec (cubic feet per second).. The expected abstraction of raw water is 200 cusec. So, percentage of water drawn from this canal is 2.2%. For Ludhiana, water will be abstracted from Sirhind canal which has max ‘carrying capacity’ of 12625 cusecs The taping point for Ludhiana is at the tail end of the canal and abstraction of raw water is 300 cusecs which is 2.4% of carrying capacity. Further, it was noticed that demand for irrigation from the canal reduced significantly in the last few years, because mainly famers

shifted to ground water for irrigation. Because of insignificant amount of water abstracted for the water supply and less pressure from irrigation, no significant change is expected to downstream water use.

Waste Water Management: Currently, the demand for water supply from ground water is 300 Litres Per Capita per Day (lpcd). With the shift to surface water and improvedd demand management (improved production and tariff management) this amount is expected to reduce to 150 lpcd which will in turn reduce waste water volumes in both cities.

ES4 ***Environmental and Social Baseline***

The activities to be implemented by PMIDC under this component would be confined within the city area of Ludhiana and Amritsar. The activities would include major civil works. There is no significant environmental habitat, biodiversity, cultural heritage site, the affected people do not meet the definition of indigenous people or ethnic minority in the targeted Areas. Detailed baseline environment of the Project area (covering biophysical and socioeconomic environment) will be collected and presented in the sub-project ESIAs

ES5 Identification of Potential Environmental and Social Impacts and mitigation

The preliminary screening study and project activity details suggest that the project activities is likely to have potentially substantial environmental impacts and high social risks & impacts without effective mitigation measures in place. There would be construction of WTP under this component and would also include pipeline laying and OHSR development. This Environmental and Social Management Framework (ESMF) describes the processes that are applicable to all project activities that will be implemented under the project.

ES5.1 Risks and Potential Environmental impact

The summary of impacts & risks are provided below. The nature of the project suggests that the following risks should be considered:

1. Impact on air & noise due to construction, burrowing, trenching, storage & stockpile of raw material & wastes, including hazardous types
2. Environmental health and safety when upgrading or rehabilitating vital health/community infrastructure or amenities to respond to Covid 19.
3. Traffic congestion due to transportation of construction & other materials
4. Pesticide presence in canal water upstream may impact supply water quality
5. Road safety & traffic, increased traffic near OHSR residential areas
6. Risk due to natural calamity like earthquake and flood
7. Decrease in aesthetics value during construction
8. Waste generation from labour camps
9. Generation of WTP sludge during operation phase, sludge disposal

ES5.2 Risks and Potential Social Impacts

The nature of the project suggests that the following risks and impacts should be considered:

1. Intake source - Downstream water allocation impact; fisheries, irrigation.
2. Labour influx, impact on local community, gender-based violence, grievances, OHS
3. Environmental health & safety issues.
4. Land acquisition for WTPs, raw water storage, Clear water pump/tanks
5. Clear water main transmission line passing through city areas and across various land uses and settlements.

6. Restriction on movement, livelihood & displacement of squatters, hawkers, etc, impact on livelihood, possible forced eviction; Impact on vulnerable groups including aged, women, BPL families & disabled
7. OHSR development, local community movement
8. Change in property values due to construction of OHSR
9. Possible restrictions on use of parks & other common use properties & resources
10. Possible impact on cultural assets due to earth work

ES6 Legal and Institutional Framework

In India, the Ministry of Environment, Forests and Climate Change (MoEFCC) is the apex administrative and regulatory body for (i) regulating and ensuring environmental protection; (ii) formulation of the environmental policy framework in the country; (iii) conservation of biological diversity and (iv) planning, promotion, co-ordination and overseeing the implementation of environmental and forestry programme. Several laws have been framed for protection of environment and for Occupational Health & Safety in India by the Central Government. The World Bank's ESF and ESSs are used to identify, avoid, and mitigate the potential negative environmental risks and impacts associated with projects funded by the bank and enhance the effectiveness of the positive impacts. This project has been classified as "substantial" for environmental risks and impacts and "high" for social impacts and risks.

ES7 Procedure for Environmental and Social Management Plan (Framework ESMP)

Each subprojects under the project shall be screened to determine the appropriate level of environmental and social impact assessment and management that would be needed. This will be done to ascertain the level of risk and which subproject will have environmental and/or social impacts that require mitigation measures as well as the appropriate project categorization. Subprojects with no material impacts will be cleared from an environmental and social perspective while those with risks and potential impacts shall be subjected to a more in-depth level of environmental and social assessment which will have to be reviewed and cleared by the Bank and approved by the implementing agencies before commencement of implementation.

ES8 Stakeholder Consultations and Grievance Mechanism

Stakeholder consultations have been be conducted at the City level to prepare this ESMF. Full details of consultation are provided in Chapter Seven. A stand-alone Stakeholder Engagement Plan will be prepared for the Project to follow including a robust Grievance Redress Mechanism (GRM). The key concerns identified from consultation is summarized in table below.

Amritsar:	
Stakeholder Concerns	**Suggested Measures**
Proper height of the OHSR needs to be maintained so that flow of water at good pressure is available to households	Ensure proper Height of the OHSR considering the locality
Availability & timing of water supply needs to ensure the requirements of the residents	Availability of 24x 7 water supply in the area will be good
Measures need to be in place to ensure environmental safety and no tampering of the OHSR	Safety measures should be in place along with some, security at the OHSR sites
Maintenance of greenery around the OHSR will be good	Plantation of trees around the OHSR will be a good step in this direction

Some parks identified for OHSR are the only parks in the locality which many people visit for walks and recreation	Suggestion on other locations, including government institutions available in the vicinity were made for OHSR
Debris from the vehicles used in the construction phase will cause dust pollution	Vehicles used for carrying the construction materials should be covered to minimize dust
Emergency and alternate back-up arrangements for the OHSRs	Provisions need to be in place like extra motors for emergency in case the main pumping mechanism at the OHSR fails
Existing pipelines are more than forty years old and in a poor condition, at some place the drinking water is getting contaminated with sewerage due to leakages	Instead of just augmentation and repair, totally new pipelines should be laid till the households for water supply

Ludhiana:	
Stakeholder Concerns	**Suggested Measures**
There is interrupted water supply, Water supply pressure is low and current schemes have unreliable water lifting arrangements	Repair old OHSRs is required before initiating construction of new storage tanks; to maintain adequate water supply pressure, the corporation should ensure proper height of the OHSRs; Existing tube well supply should not be disrupted so that it can work as a backup in case of failure of the new system; there should be proper arrangement for lifting water to the tanks including provision of extra motors in case of emergency.
Safety of OHSR needs to be addressed	There should be a bboundary-wall around the OHSR for safety of reservoir & preventing unauthorized access
Environmental and safety measures need to be in place at the OHSRs	There should be a plan available for fire safety at location with high population density and areas with several micro- small enterprises as the risk of fire is very high in such areas
Greenery near the OHSR needs to be in place	Plantation of trees around the OHSR needs to be done
If 24x 7 water supply is plabbed then awareness about water conservation needs to be done around the OHSR	Slogans regarding water conservation and saving water need to be written around the boundary walls of the OHSRs
Location of the OHSR needs to be decided after consultation with residents and proper planning	Location of OHSRs should be checked and assessed before undertaking the construction of OHSRs
Daily work routine should not be hampered during the process of construction	Maximum care needs to be taken to minimize disruption to the daily routine of the residents and establishments
Debris from transportation of the construction material needs to be managed well	Vehicles used for carrying construction materials should be covered and properly handled

Some of the OHSRs are proposed in areas which are densely populated	Suggestions on identification of alternate sites instead of the ones chosen, which are more appropriate and that will have minimum adverse impact and cause least inconvenience to the local communities
The existing water tanks are in poor condition	The old OHSRs should be demolished before initiating construction of new ones as they pose danger to residents
At some locations before initiating construction ownership of land needs to be ensured- whether the city improvement trust owns it or the corporation	Approval for OHSR construction should be given only after ascertaining the ownership of the land
During the construction phase, measures should be in place so that pipelines are not damaged by tampering or digging for other civil works	OHSR body and pipelines should be made up of steel so that there is no problem in dismantling it
Measures should be in place such that all inconveniences caused during the construction phase are remedied immediately	Pipelines should be reconstructed and roads repaired at the earliest, immediately after the construction; park beautification should be undertaken Convenience of residents of the area should be taken into consideration during the construction of OHSR & laying of pipelines. Works along main roads should be done during night hours, so that traffic disruption is minimal
Development and employment opportunities to local stakeholders	During OHSR construction, O&M of water supply services, people from the locality should be provided employment

The GRM will be structured to accommodate everyone from the public and private sectors to the general public. In addition, clear procedures will be established for complaints and made easily accessible to the public by way of public notices, and all other means of formal & informal process. The responsibility for implementation of the GRM will rest with PIU.

The ESMF has been prepared in accordance with the relevant National and State Regulations & guidelines. Copies of this ESMF, like other E&S instruments (such as ESIAs/ESMPs/Monthly, Quarterly, Annual Reports, etc) that would be prepared for this project and all its sub-projects will be disclosed and made available to the public by the PMU. The PMU will disclose the ESMF as required by the India regulations as well as the World Bank Disclosure Policy. PMU would also facilitate the disclosure of the document in the MoEFCC as well as in the participating cities. The ESMF will also be disclosed in the World Bank's external website.

Once site-specific subproject activities are determined, screening and other E&S instruments such as ESIAs/ESMPs that would be prepared for subprojects under the Project will be disclosed by PMIDC/ MC in a similar manner as that of the ESMF.

ES9 Institutional Arrangement

Implementation arrangements for PMSIP will be fully mainstreamed into the existing government structure at the State and Local Government levels. PMIDC will have a Social and Environmental Specialist who will coordinate implementation of the safeguards. PMIDC will appoint a PMC for monitoring the contractor activities and implementation. In the institutional arrangement procedure, Project Director , will be responsible from the implementation. . There is no defined institutional setup to supervise and manage the environmental and social activities under the project. There is no dedicated social and environmental cell or unit in PMIDC for monitoring and managing social, environmental and health and safety risks for the development projects. The ES implementation will be responsibility of the Chief Engineer, who will also be Project Director heading the ESMU. The Contractor will report to the PMC (Project Management Consultant), who will in report to the PIU (MC level). The MC reports to the PMU/PMIDC. The PMC will need to have qualified specialists who will review the reports from the Design and Supervision Consultants and the Contractors on the implementation of the ESMF. The Design and Supervision Consultant will work in the zone to monitor the implementation of the ESMF by the contractor and report to the PMC. It should be noted that the Project will use a Design, Build, Operate and Transfer (DBOT) contracting. DBOT will be responsible to implement the ESIA/ESMP of the Project. PMIDC will monitor implementation of the ESIA and ESMP regularly.

CHAPTER 1: INTRODUCTION

1.1 Background

Water supply system in Amritsar and Ludhiana is not reliable and efficient. The Municipal Corporations in the two cities currently supply ground water from over 800 wells in Amritsar and over 1000 wells in Ludhiana using a combination of deep and shallow wells unevenly spread across the city. The wells are in the middle of urban habitation, some close to drains and informal solid waste dumps and are not protected. Water supply from the wells is limited to 12 hours per day in Amritsar and 10 hours per day in Ludhiana. The cost recovery is low with around 30 percent recovery from user charges due to flat tariffs and large-scale exemptions; and high levels of non-revenue water — in excess of 60 percent. Furthermore, reliance on ground water has led to a rapid decline in ground water levels (by 3 meters and 2.6 meters between 2014 and 2016 in Amritsar and Ludhiana respectively). As a result, Amritsar and Ludhiana are experiencing over-exploitation of ground water resources, excessive water supply resulting in water wastage and high-power charges, and large volumes of wastewater generation.

Water quality is a serious public health concern. Twenty seven percent of samples were observed to have more than double the permissible limit of Arsenic in Amritsar, while 75 percent of samples were observed to have more than acceptable limits of Aluminium and 60 percent of samples were observed to have more than acceptable limit of Magnesium in Ludhiana. Some samples also had traces of lead and other heavy metals. High arsenic levels may cause keratosis and hyperkeratosis in humans.
Within this context, the Punjab Municipal Services Improvement Project (PMSIP) aims to support strengthening of urban governance, finances and delivery of sustainable water services in the cities of Amritsar and Ludhiana. Detail Project Description is given under Chapter 2.

1.2 Purpose of the ESMF

The main purpose of the ESMF are to:

i. Provide tools and guidelines for risk categorization of all the sub-projects to be implemented under PMSIP for which detail information are not available at this stage;
ii. Review of the potential and likely risks and impacts of the project activities and develop the environmental and social screening procedure of the sub-projects;
iii. Mainstream all relevant environmental and social issues into the design and implementation of the sub-projects;
iv. Specify appropriate roles and responsibilities, and outline the necessary reporting procedures for managing and monitoring environmental and social concerns related to subprojects; and
v. Determine the training and capacity building needed to successfully implement the provisions of the ESMF.

1.3 Approach and Methodology

This ESMF has been prepared for the whole PMSIP in accordance with all applicable World Bank Standards, Policies, Guidance Notes, IFC ESG Sector Guidelines, and the Indian, Punjab State & Local Govt. relevant regulations, acts, laws, standards and guidelines. A preliminary Environmental and Social Impact Assessment has been prepared for sub-projects that will be financed during the first

year of project implementation in Amritsar. The ESIA will be further strengthened when more information is known about the design of the WTPs and sites for construction of OHRS and distribution networks.

The following approaches were used:

Desktop Study & Literature Review

i. Review Project documents and meeting/discussions with various stakeholders including PMIDC, LMC, AMC, PMC and World Bank;
ii. Review of available secondary baseline information; and
iii. Review regulation and regulatory requirements including National, Local & World Bank.

Data Collection

i. Reconnaissance field visits and initial scoping and screening to determine the key environmental and social parameters and aspects that are likely to be impacted by the Project activities; and
ii. Data collection and analysis of environmental and social baseline pertaining to the study area.

Stakeholder Consultations

Consultations were conducted with borrowers, beneficiaries/affected parties in the participating cities.

More details on stakeholder consultation is presented in Chapter Seven.

CHAPTER 2: PROJECT DESCRIPTION

2.1 Project Components

The PMSIP is part of a series of programmatic interventions to improve urban service delivery, with a focus on water supply, in Amritsar and Ludhiana. It is preceded by the state level DPL and will be potentially succeeded by a PforR focused on results in improved municipal governance, finance, water distribution and service delivery to households. With Technical Assistance (TA) from the World Bank pre-feasibility reports were prepared for both cities in 2015 and updated in 2019, which proposed the need to migrate from rapidly depleting[1] and contaminated decentralized ground water sources to a centralized treated surface water source. The PMISP is expected to cost US$285.29 million, of which the IBRD share is 70 percent and the GoP share is 30 percent. The Project has the following three components:

COMPONENT 1: STRENGTHENING URBAN SERVICE DELIVERY SYSTEMS (IBRD: US$5.18 million; GoP: US$2.22 million): This component will finance technical assistance, training, equipment and studies to make AMC and LMC more financially sustainable, administratively efficient, technically capable and institutionally accountable. It will also finance the establishment and operationalization of water and wastewater utilities in both cities. The subcomponents are as follows:

1. **Subcomponent 1a: Strengthening water service management**
    1. *Establishment of water and wastewater utilities in Amritsar and Ludhiana MCs*, including setting up a professionally managed and professionally autonomous water and wastewater utilities in both cities with legal, administrative, financial and technical powers to develop infrastructure and provide services, collect tariff, recruit private sector for service provision, engage with water and wastewater consumers, among other activities and remain accountable to consumers and MCs.
    2. *Technical assistance to strengthen capacities of water and wastewater utilities* with respect to organizational structure and staffing; accountability and transparency rules and systems; and revenue models and financial sustainability (tariffs, subsidies, capital investment and asset management).
    3. *Communication campaigns* to strengthen citizen engagement and support behavior change as part of water demand management in participating cities.

2. **Subcomponent 1b: Strengthening urban governance and finance systems:** This sub-component will strengthen the systems and capacities of AMC and LMC in several priority areas that enhance their capabilities in urban management and service delivery. This will include but is not limited to:
    1. own source revenue enhancement;
    2. public expenditure management (PEM) and financial management (PFM) improvements;
    3. Asset Management Planning (AMP) and Capital Investment Planning (CIP) capabilities;
    4. organizational changes, including streamlining internal systems and processes, staffing and skilling;
    5. adoption of e-governance systems and practices; and
    6. social accountability and citizen outreach improvements.

1 According to the Central Water Board, Government of India. Water level is depleting about 0.5-1.0m/year in Amritsar and Ludhiana

COMPONENT 2: IMPROVING WATER SUPPLY INFRASTRUCTURE (IBRD: USD$183.4 million; GoP: USD$78.6 million): This component will finance raw water systems, water treatment plants (WTP, 440 MLD in Amritsar and 580 MLD in Ludhiana), clear water pumping systems, transmission lines and overhead reservoirs (OHSRs) in both cities.[2] Investments in water supply infrastructure will allow the cities to shift from contaminated ground water to treated surface water supply. Raw water drawn from canals will be pumped to WTPs for treatment and treated water will be collected in clear water tanks and pumped to local OHSRs through transmission networks. Infrastructure development and maintenance, and water operations will be undertaken through a private operator under a performance-based design-build-operate-transfer (DBOT) contract with a 15 percent deferred payment arrangement.

1.COMPONENT 3: COVID-19 CRISIS RESPONSE (IBRD USD$10.00 million). This component aims to support MCs in Punjab to respond to urgent and critical needs arising at the city level from the COVID-19 crisis. The component will be coordinated at the state level by the PMIDC and will roll out in the form of a block grant to the MCs in the State. It will finance short- to medium-term non-pharmaceutical interventions to address the crisis, among them, upgrading or rehabilitating vital health/community infrastructure or amenities, clean-up of city spaces/community amenities, provision and/or coordination of local services — both infrastructure and social services — that cater to COVID-19 response especially targeting poor and vulnerable households and communities, strengthening local-level disaster response systems and developing crisis/disaster response plans, communication campaigns and awareness building programs, and capacity building of local public officials and civic entities. The MCs can use the block grants in a flexible manner to finance such urgent short- to medium-term priorities from a positive list of eligible expenditures that will be listed in the Project Operations Manual (POM).

COMPONENT 4: PROJECT MANAGEMENT (IBRD: USD$ 5.33 million; GoP: USD$2.27 million): This component will support various project management activities, including but not limited to:

1. operations of the Project Management Unit (PMU) in the PMIDC and Project Implementation Units (PIUs) in the two MCs;
2. communications and public outreach activities in the two MCs and at the state level;
3. social and environmental safeguards management and fiduciary management in the two MCs;
4. monitoring and evaluation activities; and
5. technical and other studies.

2.2 Project Components and Impacts

As part of the ESMF development, the potential impacts of each PMSIP component were assessed. The results of assessment on the potential impacts are presented in Table 2.1

2 Distribution lines and household connections are not included in the scope of the PUGWSIP. These may be considered under a follow-on operation.

Table 2.1: Component wise potential impact evaluation

Component	Subcomponent/ Activities	Potential Environmental and Social Risks and Impacts	Inclusion in ESMF
Component 1:			
STRENGTHENING URBAN SERVICE DELIVERY SYSTEMS	1a: Strengthening water service management	No physical activities under component 1. This component will positively contribute to more sustainable management of water supply and wastewater that can result in improved environmental and social conditions.	Adequate human resources, E&S policies and financial resources to implement E&S mitigation measures. The policies developed and human resources trained will contribute to managing E&S risks in such a manner that will be materially consistent with the ESF beyond the project period.
	1b: Strengthening urban governance and finance systems		
Component 2			
IMPROVING WATER[3] SUPPLY INFRASTRUCTURE	Diversion of surface water from canals to Water Treatment Plants (WTPs) Construction of WTPs Construction of pumping stations to pump water from canals to WTP and from WTP to OSTs Construction of OST Laying distribution lines between water WTP and OSTs	Component 2 involved E&S risks and will have potential environmental and social impacts because of construction activities. Potential Impacts include, among others, sludges from WTPs, deterioration of water quality because of erosion and sedimentation, air pollution, noise, traffic / mobility / access, occupational & community health, labor influx, gender-based violence (GBV), involuntary resettlement & livelihood impacts; impacts of land acquisition, impacts to ecology and physical cultural resources.	1. Initial screening of sub-project activity proposal and environmental and social management 2. ESIA, ESMP, RPF, LMP, SEP Development, as appropriate for each project 3. Individual Env & Soc Screening and evaluation for each OSR

3 Distribution lines and household connections are not included in the scope of the PMISP. These may be considered under a follow-on operation.

Component	Subcomponent/ Activities	Potential Environmental and Social Risks and Impacts	Inclusion in ESMF
Component 3, COVID-19 CRISIS RESPONSE	Upgrading and rehabilitation of vital and health/community infrastructure.	Environmental health and safety issues during upgrading or rehabilitating vital health/community infrastructure or amenities	Strictly follow the screening form and develop ESMP before any activity begins on the ground.
PROJECT MANAGEMENT	Project management activities including – project coordination, supervision, technical support, communication strategy, implementation, etc	No environmental or social risks or impacts are envisaged	Adequate E&S staff and resources will be a part of the PMU and PIUs to implement the ESMF

Assessment of the potential impacts indicates that only COMPONENT 2 will have potential environmental and social risks and impacts. The World Bank environmental and social standards that are applicable for PMSIP are: (i) ESS 1 Assessment and Management of Environmental & Social Risks and Impacts, (ii) ESS 2 Labor and Working Conditions, (iii) ESS 3 Resource Efficiency and Pollution Prevention and Management, (iv) ESS 4 Community Health and Safety, (v) ESS 5 Land Acquisition, Restrictions on Land Use and Involuntary Resettlement, (vi) ESS 8 Cultural Heritage and (vii) ESS 10 Stakeholder Engagement and Information Disclosure .

Based on the assessment of potential environmental and social impacts, and with reference to the applicable World Bank ESS, this ESMF is developed to provide operational guidance that must be followed by project implementation agency & stakeholders.

This ESMF covers procedures for environmental and social management for the implementation of activities of Component 2 Water Supply Infrastructure Improvement (screening process, preparation of environmental and social assessment document and development of mitigation and action plans).

2.3 Activity Details – Ludhiana

The strategy for improving the water services is primarily to undertake treatment of surface water and pumping the treated water to different neighbourhoods in the city to deliver at the local service reservoirs connected through a complex transmission network and then distributing the stored water through a network of distribution and delivered into the houses through individual property service connections. The water supply network of Ludhiana city is given in Figure 2.1 below.

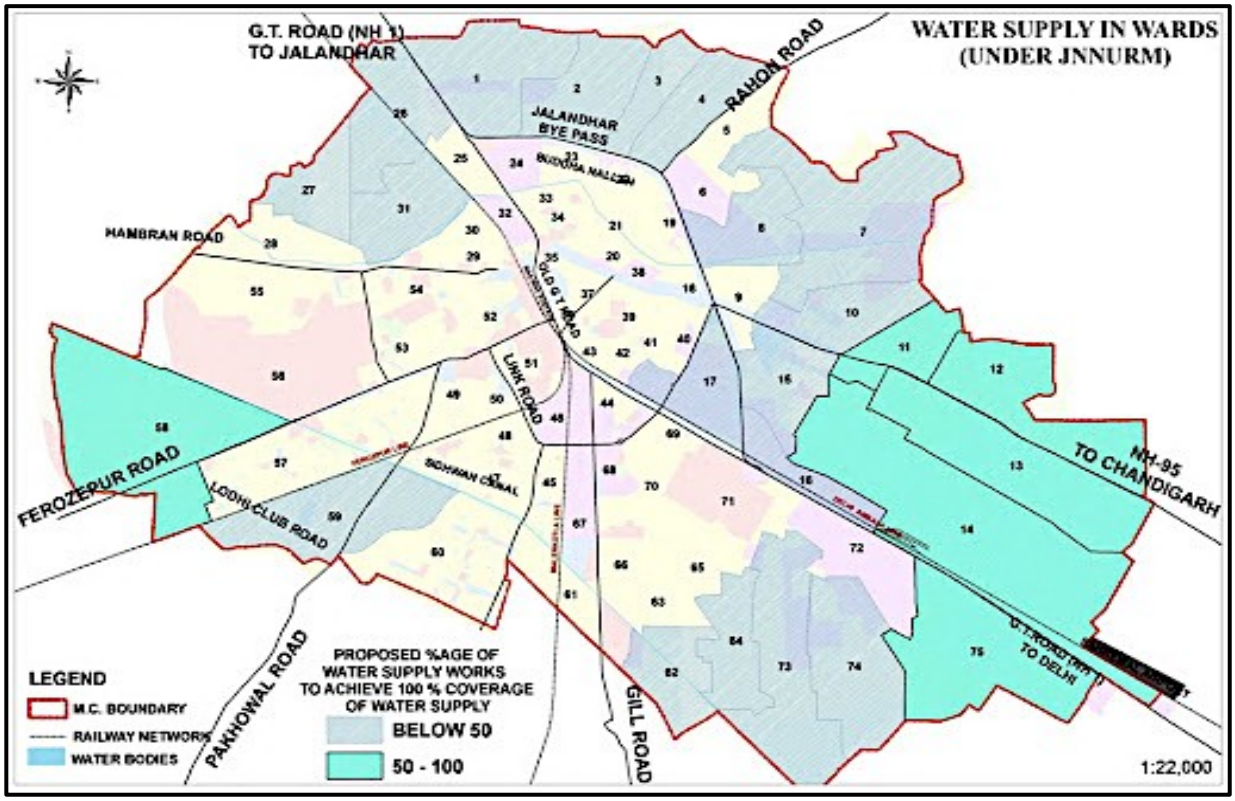


Figure 2.1: Water Network map of Ludhiana

Infrastructure Components
Intake Source:
The city corporation assisted by the Smart City Company, had been working on the proposed project. The city had initially proposed the Sidwan Canal which flows through the city as the the intake point for raw water. But based on a detailed feasability study, the Sirhind Canal system, which is about 150 years old, was identified as the raw water intake source.

The Sirhind Canal, which offtakes from Ropar Headworks on the Sutlej River has an authorized capacity of 12620 cusecs and length of 59.44km with a cultivable command area of 13.59 lac hectares. Expected abstraction of water allocation being requested is 7 % of canal capacity. As such, the new water system will draw water from the Sirhind Canal (at the tail point). The total length of the canal along with its distributaries is 6,115 km. Its main branches are the Patiala, Abohar, Bhatinda, Kotla and Ghaggar. It irrigates about 7 lakh hectares in Patiala, Sangrur, Bhatinda, Ludhiana and Ferozepur districts. The Kotla and the Ghaggar branches provide irrigation to Hissar, Sirsa and Fatehabad districts in the adjoining State of Haryana. It also provides irrigation to Ferozepur, Faridkot and Muktsar districts in Punjab and to some parts of Rajasthan.

The raw water is proposed be drawn from the canal through a new diversion works to be constructed by the canal authorities and a lumpsum provision of about Rs.30 crores (4.23 Million

USD) is proposed towards this purpose. For ensuring sustainability of the source, the following immediate actions are needed to be taken up by the Ludhiana City Corporation.

1. Provision of continuous supply of 300 cusecs of raw water from Sirhind canal near Rampur village all through the year
2. Annual allocation for 86805 cusec from the canal for purpose of providing drinking water to the Ludhiana resident population
3. Planned canal maintenance that does not result in closure of canal for more than 2 days at any given point of time.

Water Treatment Plant (WTP)

A conventional water treatment plant of capacity 580mld (ultimate Demand of year 2055) is proposed on 20 hectares of land preferably close to the canal which has yet to be identified and acquired by MCL. The raw water tapping point is planned to be close to WTP which is designed to be a conventional treatment system comprising of aeration, coagulation, flocculation, sedimentation, rapid gravity filtration and chlorination for disinfection including necessary PLC controls for plant operations connected to a SCADA system. A total capacity of about 8200kw pumping systems are proposed for raw water and treated water pumping with full electronic controls to enable remote operations.

Table 2.2: Estimated Capacity

S.No	Description	Scope	Unit
1	Raw water Storage cum pre-settling tank	10,94,100	Cum
2	Raw water collection tank	20,400	Cum
3	Raw water pumping station	1,000	Sqm
4	WTP + Boundary Wall + Staff Quarters	580	mld
5	Treated water collection tank	39,300	Cum
6	Treated water pumping station North	500	Cum
7	Treated water pumping station South	600	Cum

The hydraulic design of the scheme is done by dividing Ludhiana city into North and South zones separated by the railway line. The service reservoirs are fed by separate transmission pipeline networks of about 165Km length of varying diameters covering both north and south zones. Mild Steel (MS) pipes with internal and external lining against corrosion are proposed for sizes 1000mm to 1600mm and Ductile Iron Pipes of K9 Class are proposed for sizes 900mm and below. The transmission system delivers the treated water into service reservoirs of 1ml to 2ml capacities with 20m – 25m staging height. The North zone comprises of 58 service reservoirs and the South zone has 74 reservoirs. Necessary flow and pressure monitoring instrumentation including remote operations of reservoir inlets and outlets connected to centralised SCADA system are also proposed.

Table 2.3: Details of Service Reservoirs

			North		South		Total	
Sl No	ESR details	ESR Capacity	Number	Capacity	Number	Capacity	Number	Capacity
		ML	Nos.	ML	Nos.	ML	Nos.	ML
1	Existing ESR	0.46	12	5.5	5	2.3	17	7.7
2	Existing ESR	0.91	8	7.3	24	21.8	32	29.1
3	Existing ESR	1.82	-	-	1	1.8	1	1.8
	Subtotal		20	12.7	30	25.9	50	38.6
4	Proposed ESR	1.00	8	8.0	8	8.0	16	16.0

5	Proposed ESR	1.50	20	30.0	20	30.0	40	60.0
6	Proposed ESR	2.00	6	12.0	13	26.0	19	38.0
	Subtotal		34	50.0	41	64.0	75	114.0
	Total		54	62.7	71	89.9	125	152.6

Water Production Works : A raw water collection cum pre-settling tank is proposed with 2 days storage capacity. Although it is difficult to accommodate the collection tank within the proposed 50acre land, but it is suggested the canal reach upstream of the extraction point also can be utilitized for this purpose with a proper proactive planning of canal maintenance.

Pumping Machinery: 24-hour pumping is envisaged and the following pumping machinery is. It is suggested that of the (4 + 6=10) working pumps for treated water for North and South, 2 pumps each may be installed with variable frequency drives (VFD)s to facilitate ease of meeting the diurnal or seasonal demand variations and the balance pumps can be of fixed speed type.

Transmission Pipeline network System: the treated water from WTP will be pumped directly to service reservoirs through 165 km of pipeline.

Over Head Service Reservoir : Existing service reservoirs with a total capacity of 51600 Cum in the city including new reservoirs executed recently under the AMRUT program. The city corporation has hired a structural consultant to undertake condition assessment of the existing tanks and the work is still in progress. The service storage requirement is to be assessed based on mass-balance analysis which is based on consumption pattern at the customer end.

2.4 Activity Details – Amritsar

The ward map of Amritsar city is given in Figure 2.2 below

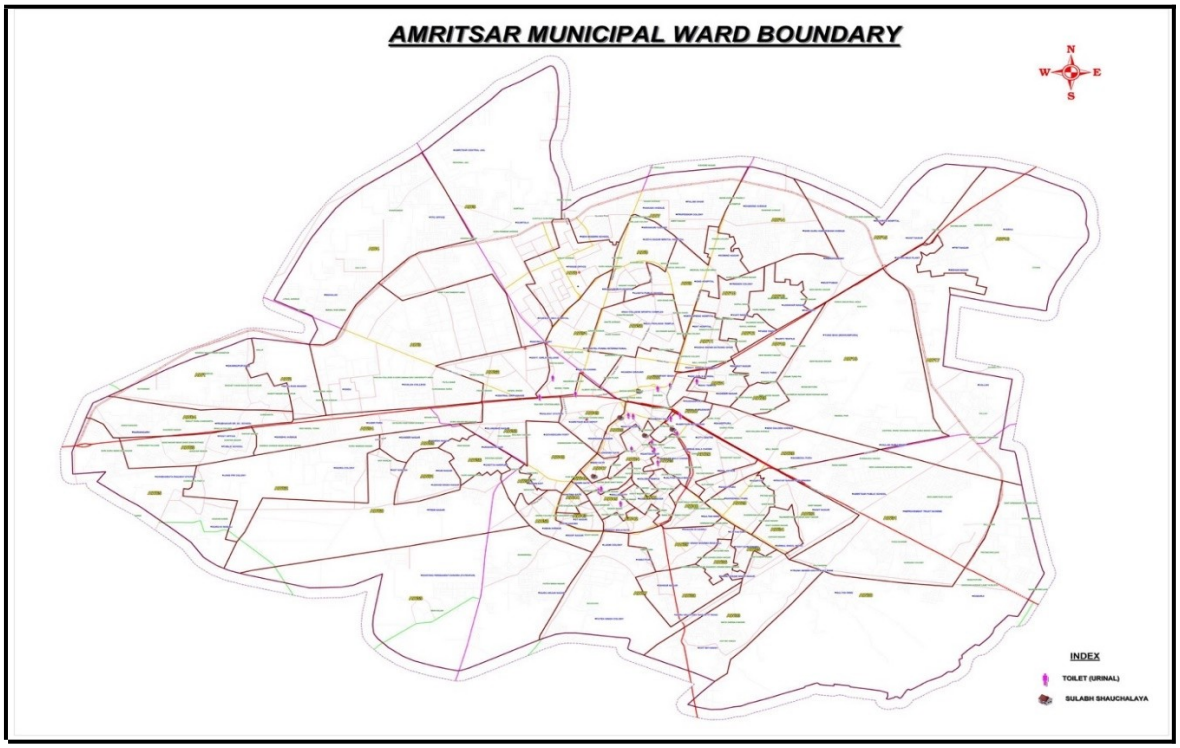


Figure 2.2: Ward map of Amritsar

Intake Source:

The Upper Bari Doab Canal (UBDC) which has a cultivable command area of 5.73 lakh hectares is proposed as the source of water supply. The irrigation department has provided a No Objection Certificate (NOC) to abstract a continuous supply of 200 cusecs (<10% of canal capacity) of raw water from UBDC canal near Vallah village; within the city limits for this project. The UBDC system was remodelled during 2001-2005, to ensure full utilization of stored waters of river Ravias a result of commissioning of Ranjit Sagar Dam in the year 2000. The Madhopur barrage is constructed for water diversion to four main canals which branch off from it. Main water abstraction in the system below Modhopur barrage water is diverted into 2 main canals, Upper Bari Doaba Canal (UBDC) and Hydel Canal. UBDC is further bifurcated into (i) Ravi - Beas-Link Canal and Main line. The UBDC presently, has an authorized discharge of 9000 Cs. Seven main branch canals off take from UBDC with 247 distributaries and minor branch canals.

Water Treatment Plant:

A water treatment plant of 431mld is proposed at a 40acre land identified by the city and close to the UBDC canal. The plant is proposed with conventional treatment system comprising of aeration, coagulation, flocculation, sedimentation, rapid gravity filtration and chlorination for disinfection including necessary PLC controls for plant operations connected to a SCADA system. A total capacity of about 6000kw pumping systems are proposed for raw water and treated water pumping with full electronic controls to enable remote operations.

Table 2.4: Water supply capacity

S.No	Description	Scope	Unit
1	Raw water Storage cum pre-settling tank	916,000	Cum
2	Raw water collection tank	8,100	Cum
3	Raw water pumping station	650	Sqm
4	WTP + Boundary Wall + Staff Quarters	440	Mld
5	Treated water collection tank	18,333	Cum
6	Treated water pumping station North	520	Sqm

The hydraulic design of the treated water transmission scheme is done by dividing the city into North and South zones separated by the railway line. The service reservoirs are fed by separate transmission pipeline networks of about 119Km length of varying diameters. The North zone comprises of 57 service reservoirs and the South zone has 60 reservoirs. Necessary flow and pressure monitoring instrumentation including remote operations of reservoir inlets and outlets connected to centralised SCADA system are also proposed.

Table 2.5: Amritsar Proposed Service Reservoirs

			North		South		Total	
S No	ESR details	ESR Capacity	Total Nos.	Total Capacity	Total Nos.	Total Capacity	Total Nos.	Total Capacity
		ML	Nos.	ML	Nos.	ML	Nos.	ML
1	Existing ESR	0.45	16	7.2	15	6.8	31	14.0
2	Existing ESR	0.91	10	9.1	9	8.2	19	17.3
	Subtotal		26	16.3	24	14.9	50	31.2

3	Proposed ESR	1	8	8.0	10	10.0	18	18.0
4	Proposed ESR	1.5	6	9.0	11	16.5	17	25.5
5	Proposed ESR	2	10	20.0	12	24.0	22	44.0
	Subtotal		24	37.0	33	50.5	57	87.5
	Total		50	53.3	57	65.4	107	118.7

No information is given about the pumping station, connection of WTP with ORS and construction of ORS. Can you provide these to make it consistent with Ludhiana?

CHAPTER 3: LEGAL AND REGULATORY FRAMEWORK

This Chapter outlines and provides a review of existing policies, legislations and regulations. It identifies the requirements that guide the implementation of the ESMF in addition to an assessment of the institutional framework for the implementation of the sub-projects.

There are several relevant Indian Acts and Regulations that are relevant to this project. Also, as this Project is being financed by the World Bank, its guidelines are paramount and are discussed. There must be harmony between both sets of frameworks, but should there be any discrepancies between these, the guidelines of the World Bank shall supersede those of the country.

3.1 Indian National Regulations & Standards

In India, the Ministry of Environment, Forests and Climate Change (MoEFCC) is the apex administrative and regulatory body for (i) regulating and ensuring environmental protection; (ii) formulation of the environmental policy framework in the country; (iii) conservation of biological diversity and (iv) planning, promotion, co-ordination and overseeing the implementation of environmental and forestry programme. Several laws have been framed for protection of environment and for Occupational Health & Safety in India by the Central Government. The relevant regulation pertaining to the project activity has been discussed as under. The compliance to all environmental, health, safety and social regulation have been presented in Table 3.1.

Table 3.1: Applicable Environmental, Health, Safety and Social Regulation

S.N.	Act/Law	Agency Responsible	Key provisions and purpose	Relevance to Project
1	The Air (Prevention & Control of Pollution) Act 1981	State Pollution Control Board (SPCB)	Development of water supply project falls under white	Water Supply Project is exempted to obtain CTO/CTE.
2	The Water (Prevention & Control of Pollution) Act 1974	State Pollution Control Board (SPCB)	Development of water supply project falls under white	Water Supply Project is exempted to obtain CTO/CTE.
3	Forests (Conservation) Act, 1980 and Rules 1981	Forest Department	The Forest Conservation Act and Rules mandate projects requiring diversion of forest land for non-forest purposes to seek Forest Clearance from the Ministry of Environment and Forests.	Not Applicable As reported, no forest land is involved for the development of this project.
4	Environmental Impact Assessment (EIA) Notification 2006 & and subsequent amendments, including Draft Notification March 2020	MoEFCC	Based on The EIA Notification 2006 and it sub sequent amendments, Water supply project is exempt from obtaining prior Environmental Clearance from the regulatory authorities.	The project does not need prior Environmental Clearance.
5	Environment (Protection) Seventh Amendment Rules 2009	CPCB	Ambient air quality monitoring has to be carried out and the concentration limits for the air quality parameters should be in compliance with NAAQS 2009. Activities in the project especially during construction should not result in exceeding National Ambient Air Quality Standards (NAAQS) for ambient concentrations of air pollutants (such as particulate matter). If violation of the Rules takes place then the penalty will be decided on the basis of the parent Air Act 1981.	Applicable since minor to moderate air emission is expected from the project construction phase
6	Noise (Regulation and Control) Rules 2000	SPCB	The Rules stipulate ambient noise limits during day time and night time for	Applicable since minor to moderate noise emission is expected from project activity

S.N.	Act/Law	Agency Responsible	Key provisions and purpose	Relevance to Project
	amended in 2010		industrial, commercial, residential and ecologically sensitive areas. The rules apply both during the construction and operation of the project. Violation of the standards for assessing the noise quality due to the project will lead to penalty as under the EP Act 1986.	during construction phase
7	Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules 2008 Hazardous and Other Wastes (Management and Trans boundary Movement) Amendment Rules, 2016.	SPCB	These Rules outline the responsibilities of the generator, transporter and recycler/re-processor of the hazardous wastes for handling and management in a manner that is safe and environmentally sound. Project proponent need to obtain consent from State Pollution Control Board for generation and storage of hazardous waste like transformer oil, etc. irrespective of quantity of waste. As per the law the occupier and the operator of the facility should be liable to pay financial penalties as levied for any violation of the provisions under these rules by the State Pollution Control Board with the prior approval of the Central Pollution Control Board.	Applicable during construction phase. During the construction, wastes and used oils, will be generated. The operation phase of the project will result in generation of some quantities of hazardous waste, mostly in the form of waste/used oil from WTP operation. Project developer needs to obtain consent from Punjab SPCB for storage of transformer oil, if required. All the hazardous waste generated due to the project should be stored and disposed as per the requirements of the Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2008/ Hazardous and Other Wastes (Management and Trans boundary Movement) Amendment Rules, 2016. Storage on a paved surface in a designated area with adequate secondary containment, with adequate labelling and before it is disposed to an SPCB approved vendor.
8	Environment (Protection) Second Amendment Rules 2002	MoEFCC	The DG sets installed during construction should comply with maximum permissible noise levels and noise control measures for diesel generators up to 1000 KVA capacity as specified in the Act.	The power requirement during construction phase if met through DG sets, needs to adhere to prescribed CPCB noise level limits and noise control measures.
9	The Building and Other Construction Workers'	Ministry of Labour and Employment, GoI	This Act provides for safety, health and welfare measures of buildings and	Applicable during construction phase. Project proponent will ensure through its

S.N.	Act/Law	Agency Responsible	Key provisions and purpose	Relevance to Project
	(Regulation of Employment and Conditions of Service) Act 1996		construction workers in every establishment which employs or employed during the preceding year ten or more such workers. These measures include fixing hours for normal working day, weekly paid rest day, wages for overtime, provision of basic welfare amenities like drinking water, latrines, urinals, crèches, first aid, canteens and temporary living quarters within or near the work site. This Act also requires application of the following: Building or other construction workers' (regulation and Employment Conditions of Service) Central Rules 1998 & Workman's compensation Act, 1923 to buildings and other construction workers. These will be followed by contractor & developer during construction and operation phase.	contractors that basic amenities are provided to the labours. Project proponent through its contractors should also ensure all vendors employed should have valid labour license. Compensation to workers (own and vendors) should not be below daily wage rate as specified by Government. Master roll must be maintained. Employee ID card must be issued (own and vendors). Safety, health and welfare measures of building and construction workers as mentioned in the act needs to be complied with. Failure to comply results in financial penalty /imprisonment of the principal employer along with vendor and closure of project.
10	Workmen's Compensation Act, 1923 & Rules 1924	Labour Welfare Board, Rajasthan.	The Act requires if personal injury is caused to a workman by accident arising out of and during his employment, his employer should be liable to pay compensation in accordance with the provisions of this Act.	Applicable during construction phase. Project proponent should ensure through its contractors in case of any accident/ injury/ loss of life the workmen should be paid a minimum compensation as calculated under this act both during construction and operation phase of the project. The reporting of accidents needs to be done in prescribed forms as per the act and the incident / accident register needs to be maintained accordingly. The Act also gives a framework for calculating amount of compensation and wages.
11	The Contract Labour (Regulation and Abolition) Rules, 1971	Labour Welfare Board, Punjab	The Contract Labour (Regulations & Abolition) Act, 1970 requires every principal employer of an establishment	Applicable. All vendors will be employed including contractors should have valid labour license.

S.N.	Act/Law	Agency Responsible	Key provisions and purpose	Relevance to Project
	Contract Labour (Regulation And Abolition), 1973		to make an application to the registering officer in the prescribed manner for registering the establishment. The Act and its Rules apply to every establishment in which 20 or more workmen are employed on any day on the preceding 12 months as contract labour and to every contractor who employs or who employed on any day preceding 12months, 20 or more workmen. It does not apply to establishments where the work performed is of intermittent or seasonal nature. An establishment wherein work is of intermittent nature will be covered by the Act and Rules if the work performed is more than 120 days in a year, and where work is of a seasonal nature if work is performed more than 60 days in a year.	Compensation to contract workers (own and vendors) should not be below daily wage rate as specified by Government of India. Master roll must be maintained. Employee ID card must be issued (own and vendors). Safety, health and welfare measures of building and construction workers as mentioned in the act needs to be complied with. Failure to comply results in financial penalty. Failure to comply results in financial penalty. PIU through its contractors should also ensure that conditions like hours of work, fixation of wages and other essential amenities in respect of contract labour are provided and in compliance with the standards.
12	Minimum Wages Act, 1948	Labour Welfare Board, Punjab	This Act provide for fixing minimum rates of wages in certain employments and requires the employer to provide to every worker engaged in a scheduled employment to be paid wages at a rate not less than the minimum rate of wages fixed by such notification for that class of employees in that employment without any deductions except as may be authorized within such time and subject to such conditions as may be prescribed.	Applicable
13	The Child Labour (Prohibition and Regulation) Act, 1986	Labour Welfare Board, Punjab	The Act prohibits employment of children in certain occupation and processes. The Act also specifies	PIU should ensure that no child labour will be engaged at site for construction or operation works either directly or by the sub-contractors.

S.N.	Act/Law	Agency Responsible	Key provisions and purpose	Relevance to Project
			conditions of work for children, if permitted to work.	PIU should include a clause in the subcontractor agreements prohibiting employment of child labour.
14	Companies Act, 2013	PMIDC, MC	According to Schedule 135 sub -section 1, the companies meeting the threshold criteria (Minimum net worth of rupees 500 Crore, Turnover up to "1000 Crore" and having a net profit of at least '5 crore') specified should spend in every financial year, at least 2% of the average net profits of the Company made during the three immediately preceding financial years in pursuance of CSR policy.	The project will need to comply with the requirement as stated in the law.
15	Panchayat (Extension to Scheduled Areas) Act 1996	PMIDC, MC	Provisions of this rules are: A state legislation on panchayats in the scheduled area should take care of the customs, religious practices and traditional management practices of community resources.	The project will need to comply with the requirement as stated in the law.
16	Land Acquisition Act 1894 (Amended in 1984) and The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013	Local Administration District Collector Revenue Officer	The law stipulates mandatory consent of at least 70% of affected people for acquiring land for Public Private Partnership (PPP) projects and 80% for acquiring land for private companies. It also requires that payment of compensation for the owners of the acquired land will be four times the market value in rural areas and twice in urban areas. It also stipulates that the land cannot be vacated until the entire compensation is awarded to the affected parties.	Purchase or acquisition of land is required for the WTP and raw water storage. This will be voluntary, and market based. The Transmission line construction will impact the people close to ROW as well as those doing business on the ROW presently, including kiosks, shops, hawkers, encroachers, squatters, etc. proposed for the project. Hence, it will involve involuntary displacement; therefore, LARR 2013 is applicable for this project.

S.N.	Act/Law	Agency Responsible	Key provisions and purpose	Relevance to Project
17	Punjab Panchayati Raj Act 1994	Panchayat union	The act gives powers to the Panchayats in case there is any grievance arises by the project. There is Provision for application of consent from the respective panchayat body/village administrative officer etc., during the project life cycle.	PIU will ensure that all grievances raised by locals related to the project are addressed through grievance redressal process. O&M contractor shall be responsible for Grievance Redressal, however, PIU will ensure regular compliance
18	The Bonded Labor System (Abolition) Act 1976	Ministry of Labor & Employment	The Bonded Labor System (Abolition) Act 1976: States that all forms of bonded labor stands abolished and every bonded labor stands freed and discharged from any obligations to render any bonded labor	PIU will ensure compliance.
19	The Child Labor (Prohibition and Regulation) Act, 1986	Ministry of Labor & Employment	The Act prohibits employment of children in certain occupation and processes (part II, Section 3). The Act also specifies conditions of work for children, if permitted to work. These include a working day of maximum of 6 hours a day (including rest), no work period exceeding 3 hours at a stretch, and no overtime (Section 7). The Act requires maintenance of a register for employed children	PIU will ensure compliance through deputed O&M Contractor.

3.2 The World Bank's Environment & Social Standards (ESS)

The World Bank's Environmental and Social Standards (ESS) are a cornerstone to its support to sustainable development. The Environmental and Social Standards set out the requirements for Borrowers relating to the identification and assessment of environmental and social risks and impacts associated with projects supported by the Bank through Investment Project Financing. The objective of these policies is to prevent and

mitigate undue harm to people and their environment in the development process. Any project that is likely to pose any form of adverse environmental impact will trigger the relevant ESSs. The ESSs relevant to this project are given below in Table 4.2

Table 3.2: World Bank's Environmental and Social Standards

ESS	ESS Objectives	Applicability to PMSIP (Component 2)	ESMF compliance requirements
ESS 1 Assessment and Management of Environmental and Social Risks and Impacts	To identify, evaluate and manage the environment and social risks and impacts of the project in a manner consistent with the ESSs. To adopt a mitigation hierarchy approach to: Anticipate and avoid risks and impacts; Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels; Once risks and impacts have been minimized or reduced, mitigate; Where significant residual impacts remain, compensate for or offset them, where technically and financially feasible. To adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities resulting from the project. To utilize national environmental and social institutions, systems, laws, regulations and procedures in the assessment, development and implementation of projects, whenever appropriate To promote improved environmental and social performance, in ways which recognize and enhance Borrower capacity.	The ESS 1 is applicable to projects with environment and/or social risks and/or impacts. PMSIP is a water supply development project and will have environmental and social impacts during planning and implementation phases. **ESS 1 is therefore relevant** An Environmental and Social Management Plan **(ESMP)** has to be prepared taking into consideration the potential social and environmental impacts or risks already identified & assessed in **ESIA.** Organizational structure with roles and responsibilities of the team within the implementing organization is required. Considering land acquisition for WTP will be acquired and also burrowing & trenching activity along common property/ roads & development of OHSR a Stakeholder Engagement Plan **(SEP)** needs to be developed and implemented as well as adequate	PMU to develop an Environmental & Social Management Framework (ESMF), **Environmental & Social Commitment Plan** (ESCP) as well as adhere to the ESMP plan. The PIU is required to fulfil the following requirements: 1. Develop Environmental and social action plans as appropriate; 2. Identification of risks and impacts; 3. E&S Management Plan; 4. Strengthen organizational capacity and competency to manage E&S risks; 5. Training for security and safety workers; 6. Emergency preparedness and response; 7. Stakeholder engagement/ grievance redressal; and 8. Monitoring, reporting and review.

ESS	ESS Objectives	Applicability to PMSIP (Component 2)	ESMF compliance requirements
		disclosure needs to be done. This should aim to inform the community about project related adverse impacts or risks. Grievance Redressal Mechanism **(GRM)** will be implemented in this project System of ESS implementation monitoring with periodic audits will be established at the site.	
ESS 2: Labour and Working Conditions 1. To promote safety and health at work 2. To promote the fair treatment, non-discrimination and equal opportunity of project workers 3. To protect project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with this ESS) and migrant workers, contracted workers, community workers and primary supply workers, as appropriate. 4. To prevent the use of all forms of forced labor and child labor. 5. To support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law 6. To provide project workers with accessible means to raise workplace concerns		The ESS 2 applies to workers (construction & operation) directly engaged by the borrower (direct workers), EHS, workers engaged through third parties (contracted workers), as well as workers engaged by the client's primary suppliers & contractor (supply chain workers). The project will involve employment of direct and contracted workers during construction and operation phases. **ESS 2 is therefore relevant**	An LMP will be prepared to meet the ESS2 requirements. It will contain: How the implementing agency, as a part of oversight procedures will need regular monitoring of compliance to the aforesaid guidelines/ requirements and ensure that these are met at project sites. Internal audits and follow up on corrective actions to be undertaken to assess efficacy of the oversight system at the project site. Ensure adequate facilities and amenities, including health & sanitation, security, waste management and disposal measures,: adequate living/sleeping facilities and space per person; potable water that meets national standards and standards as laid down by ILO; toilets, washing and cleaning facilities; canteen/mess or fuel for cooking; locker/storage facilities; and facilities for management and disposal of garbage, sewage and other waste at the labour camp. The agency will periodically review and

ESS	ESS Objectives	Applicability to PMSIP (Component 2)	ESMF compliance requirements
			monitor the condition of the labour camps at all the mentioned project sites. The worker accommodation (where needed) standards as laid down by ILO to be followed. **Labour Management Procedure** (LMP) to be developed. The implementing agency as a part of oversight procedures will need regular monitoring of compliance to the aforesaid guidelines/ requirements and ensure that these are met at project sites. Internal audits and follow up on corrective actions will also need to be undertaken to assess efficacy of the oversight system at the project site
			Borrower should develop site specific HR policy in line with the HR Policy at their State & City level. They or their appointed contractor, if any, should inform their employees about their rights under national labour and employment laws.
			Equal opportunity should be given to both men and women depending on their skills and capacity wages, work hours and other benefits should be as per the national labour and employment Laws at the project sites.
			Grievance Redressal Mechanism for workers should be framed under the ESMS and the same will be implemented at

ESS	ESS Objectives	Applicability to PMSIP (Component 2)	ESMF compliance requirements
			project level. This is applicable both during construction and operation phase and should be supervised by MC.
			Provide workers with a safe and healthy work environment, considering risks inherent to the particular project sector.
ESS 3: Resource Efficiency & Pollution Prevention and Management	To promote the sustainable use of resources, including energy, water and raw materials To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities To avoid or minimize project-related emissions of short and long-lived climate pollutants To avoid or minimize generation of hazardous and non-hazardous waste To minimize and manage the risks and impacts associated with pesticide use	In case the PMSIP construction & operation phase contain any hazardous material, chances of ground water and soil contamination cannot be ruled out. Contractor (construction & OM will be accountable for collection and safe disposal of hazardous material and needs to standard it's liability by keeping record of mitigation measures to standard against any future liability. Waste oil and other hazardous chemicals released from construction activities may result in contamination of ground and nearby surface water. Impact on air pollution during construction. Assessment to include a reasonable evaluation of volume of water extracted and wastewater produced, Operation phase will generate Sludge from WTP	Downstream water allocation and use for irrigation, fishery and other activities may be impacted if the amount of drawl is high. Water (construction) for project should be sourced & managed according to local permission & capacity. Localized and temporary impact water quality is likely during construction phase. However, impacts would be temporary and manageable. Contractors should implement measures during construction for management of construction debris generated during construction. Further PIU will ensure through its contractors that wastes like packing material, metal, debris, cement bags, drums/ cardboards etc. are collected, stored and disposed off to re-users or in appropriate authorized debris disposal areas. 1. The project site should be having appropriate facilities for collection, treatment and disposal of sewage (septic tank and soak pit) which is used both during construction and

ESS	ESS Objectives	Applicability to PMSIP (Component 2)	ESMF compliance requirements
			operation phases should be provided 2. estimates of water abstraction volumes from the Upper Bari Doab Canal (alongside potential impacts); and 3. wastewater generated during operational phase, and expected impacts on existing sewerage system. .
		During the construction phase, the vehicles involved for hauling of equipment's and materials to the project site may increase the pollution level and dust in the air. **ESS 3 is therefore relevant**	PIU through its contractors will ensure sprinkling of water to reduce dust in the air. Besides, ensure to use the vehicles having valid PUC certificates & regular maintenance
			PIU through contractors should plan and implement pollution control measures. Practices like minimal release of waste, safe disposal of waste, wastewater management etc. should be considered in all phases of project life cycle.
ESS 4: Community Health and Safety	To anticipate and avoid adverse impacts on the health and safety of project-affected com- munities during the project life cycle from both routine and nonroutine circumstances To promote quality and safety, and considerations relating to climate change, in the design and construction of infrastructure, including dams To avoid or minimize community exposure to project-related traffic and road safety risks,	This Standard is applicable to projects which entail potential risks to the health and safety of affected communities from project activities. The project will involve transportation of large components, which may pose safety risks to the affected communities. Impacts due Electrocution and Firing due to short-circuit, Accidents during	The Applicability will be both to the construction and operation phase at the WTP, Water Transmission Line & OHSR sites. In addition to the movement of heavy machinery / vehicles during the construction phase. A Traffic management plan will be in place post implementation for the transmission route areas. The Action Plan and any other relevant project-related information is to enable the influenced communities and relevant

ESS	ESS Objectives	Applicability to PMSIP (Component 2)	ESMF compliance requirements
	dis- eases and hazardous materials To have in place effective measures to address emergency events To ensure that the safety of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities To ensure that potential GBV risks to communities and within the occupants of the labor camps itself are mitigated	trenching, burrowing, cutting, chipping and piling, Physical injuries, accidents by entering construction site by locals, Trip and fall hazards or by diseases due to unhygienic condition etc. **The ESS 4 is therefore relevant**	government agencies to understand these risks and impacts and will engage the influenced communities and agencies on an on-going basis consistent with the requirements of the ESS. A GBV risk rating using the World Bank's GBV Risk Rating Tool will be generated and appropriate GBV risk mitigation measures will be implemented using relevant good practice notes developed by the World Bank. A management plan needs to be formulated as part of ESIA process to address the issue.
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	To avoid involuntary resettlement or, when unavoidable, minimize involuntary resettlement by exploring project design alternatives. To avoid forced eviction To mitigate unavoidable adverse social and economic impacts from land acquisition or restrictions on land use by: (a) providing timely compensation for loss of assets at replacement cost6 and (b) assisting displaced persons in their efforts to improve, or at least restore, their livelihoods and living standards, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher . To improve living conditions of poor or vulnerable persons who are physically	Land required for WTP facility. Hawkers & Squatters to be impact during transmission line construction. Adjacent land parcels during construction may provide restriction. Road access. Livelihood of temporary roadside vendors. **The ESS 5 is therefore relevant**	It was informed, that lands for the WTP has been identified for Amritsar, whereas for Ludhiana land and not been identified. . Temporary restrictions in movement due to laying of water transmission mains. Vendors, Squatters, Encroachers will be displaced and/or livelihood impacted A **GRM Policy is to be** framed under the system. It should incorporate procedures for lodging of grievances, processing of grievances, resolving grievances and closing of grievances. Grievance redressal framework for onsite implementation should also be formulated.

ESS	ESS Objectives	Applicability to PMSIP (Component 2)	ESMF compliance requirements
	displaced, through provision of adequate housing, access to services and facilities, and security of tenure To conceive and execute resettlement activities as sustainable development programs, providing sufficient investment resources to enable dis- placed persons to benefit directly from the project, as the nature of the project may warrant To ensure that resettlement activities are planned and implemented with appropriate dis- closure of information, meaningful consultation, and the informed participation of those affected		The grievances would be addressed through direct & indirect methods, call, email, sms, social media, written, online, Suggestion Box, Community Meetings and Meetings with Authorities responsible for welfare and development of the city. There would be one Grievance Redressal Cell (GRC) on site.
ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	To protect and conserve biodiversity and habitats To apply the mitigation hierarchy and the pre-cautionary approach in the design and implementation of projects that could have an impact on biodiversity To promote the sustainable management of living natural resource To support livelihoods of local communities, including Indigenous Peoples, and inclusive economic development, through the adoption of practices that integrate conservation needs and development priorities.	Since most of the specific sites for the project have not yet been known, the ESIA will assess whether project activities will have impacts on natural habitat and biodiversity.. **The ESS - is relevant**	
ESS 7: Indigenous People/ Sub Saharan African Historically Underserved Traditional Local Communities	To ensure that the development process fosters full respect for the human rights, dignity, aspirations, identity, culture, and natural resource- based livelihoods of Indigenous Peoples/ Sub-Saharan African	Neither Amritsar, nor Ludhiana have any population of indigenous people. The project area or parts thereof also do not fall in any notified Tribal Zone.	

ESS	ESS Objectives	Applicability to PMSIP (Component 2)	ESMF compliance requirements
	Historically Underserved Traditional Local Communities To avoid adverse impacts of projects on Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities, or when avoidance is not possible, to minimize, mitigate and/or compensate for such impacts To promote sustainable development benefits and opportunities for Indigenous Peoples/Sub- Saharan African Historically Underserved Traditional Local Communities in a manner that is accessible, culturally appropriate and inclusive To improve project design and promote local support by establishing and maintaining an ongoing relationship based on meaningful consultation with the Indigenous Peoples/Sub- Saharan African Historically Underserved Traditional Local Communities affected by a project throughout the project's life cycle To obtain the Free, Prior, and Informed Con- sent (FPIC) of affected Indigenous Peoples/ Sub-Saharan African Historically Underserved Traditional Local Communities in the three circumstances described in this ESS To recognize, respect and preserve the culture, knowledge, and practices of Indigenous Peoples/Sub-Saharan African Historically Under- served Traditional Local Communities, and to provide them with an opportunity to adapt to changing conditions in a manner and in a time- frame acceptable	Therefore, **ESS 7 not relevant for this project.**	

ESS	ESS Objectives	Applicability to PMSIP (Component 2)	ESMF compliance requirements
	to them		
ESS 8: Cultural Heritage	To protect cultural heritage from the adverse impacts of project activities and support its preservation To address cultural heritage as an integral aspect of sustainable develop To promote meaningful consultation with stake- holders regarding cultural heritage To promote the equitable sharing of benefits from the use of cultural heritage	This ESS 8 is relevant when tangible forms of cultural heritage, unique natural features or tangible objects that embody cultural values and certain instances of intangible forms of culture are impacted or are to be used for commercial purposes. Possible chance finding of notified cultural heritage site, beliefs, etc. may be located near the project areas. **Therefore ESS 8 is relevant**	**Chance find Procedure** will be provided in the ESMP in case of discovery of any artefacts/ structures, places with beliefs, and/ or settlement of yore in the future at proximity of the project area.
ESS 9: Financial Intermediaries	To set out how the FI will assess and manage environmental and social risks and impacts associated with the subprojects it finances To promote good environmental and social management practices in the subprojects the FI finances To promote good environmental and sound human resources management within the FI	There are no FIs involved in this project. Therefore, **ESS 9 not applicable for this project.**	
ESS 10: Stakeholders Engagement and Information Disclosure	To establish a systematic approach to stake-holder engagement that will help Borrowers identify stakeholders and build and maintain a constructive relationship with them, in particular project-affected parties To assess the level of stakeholder interest and support for the project and to enable	The PMSIP including the construction of WTP, laying of water transmission lines and development of OHSR will immensely benefit the local population and in the same time expose to significate negative	**Stakeholder Engagement Plan (SEP) is to be prepared.** Identification of project affected persons, interested parties -civil societies, residents, Vulnerable groups – aged, women, disabled, children need to be engaged, informed, record their views, suggestions & grievance

ESS	ESS Objectives	Applicability to PMSIP (Component 2)	ESMF compliance requirements
	stake- holders' views to be taken into account in project design and environmental and social performance To promote and provide means for effective and inclusive engagement with project-affected par- ties throughout the project life cycle on issues that could potentially affect them To ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format To provide project-affected parties with accessible and inclusive means to raise issues and grievances and allow Borrowers to respond to and manage such grievances.	environment & social risks during the construction & implementation phase. As such, in order have prior, informed social approval and mitigate the social implications stakeholder engagement, consultation, feedback is required. **The ESS 10 is therefore relevant**	and address the concerns. Project Grievance Mechanism by addressing ES performance feedbacks by formal and informal process. Grievance redress system development – support task team, single entry point at the corporate level. An appeals committee will be setup for the grievant, if they are not satisfied by the outcome of GRM.

CHAPTER 4: ENVIRONMENTAL AND SOCIAL BASELINE

In order to predicate various types of environmental and social impacts likely to arise due to implementation of the project, it is essential to establish the baseline environmental setting of the physical, natural and socio-cultural environmental parameters along the project and within the project influence area. Details of the baseline environmental parameters are required for decision making for the project design, implementation and operation from the environmental and social point of views. The data was generated through primary data collection (direct monitoring) and secondary sources (published data).

4.1 Ludhiana and Amritsar Cities

Ludhiana, popularly known as "Manchester of North India," is a major industrial and commercial node, while Amritsar is a historic city having its own socio-cultural profile. The general land use pattern is spreading beyond the municipal boundaries and expansion in the peri-urban or urban fringe areas. There is expansion of urban activities along all major roads with establishment of large show rooms, new residential development, technical and other specialized institutions, recreational resorts and eateries around these cities.

The Amritsar is located in the north west part of Punjab along India- Pakistan border; while Ludhiana is located in the centre of the state connected with efficient road/rail networks with all parts of the country. The enhanced and improved transport connectivity in the central belt of Punjab is one of the major factors for the expansion of liner urban activities.

As per the 2011 census, it is observed that every third citizen residing in urban areas of Punjab reside either in Ludhiana or in Amritsar. Out of the 211 urban settlements in Punjab, Ludhiana and Amritsar share 20 and 13 per cent of the total urban population respectively. These two Class I cities are the backbone of the shifting economies of the state; their combine share is around 60 per cent in total urban population of the state.

The Amritsar city has shown negative growth of industry during 1995- 2009 phases. There are quite fluctuating growth trends as compared to previous years. Ludhiana has the highest urban growth rate of 71.77 per cent in the year 1991, which is reduced to 34.11 per cent in year 2001. There is steady rise of the growth of Amritsar from 19.16 per cent in1991 to 41.15 per cent in 2001 and again falls to 13.22 per cent in 2011. These two cities accommodate 49 per cent industries of the state which accounts 43 per cent of the total industrial workers of the state (2009).

4.2 Land Use Character of Amritsar and Ludhiana

Amritsar is a dominant socio-political centre with mild growth of urban population. It is the second metropolitan city of Punjab having a population of 1.13 million in the year 2011. It comes in the tier III category of Indian cities and is one of the priority areas of the state. The tier III and IV cities need to have initial state support to generate its own resources (McKinsey 2010). The land use distribution and its future approach will be seen in this context. There is sizable concentration of Industries in the city which is 5.35 per cent of the total land use of the city. The commercial use is 4.72 per cent. The second highest land use is of public and semi-public activities which is 8.86 per cent of the total use. Amritsar has the district level offices; specialized educational institutes also hosted specialized socio-cultural organization,

NGOs and CBOs. The existence of cantonment areas is not considered as an important part of the city, despite this city also has number of institutional areas which all constitutes 10.58 per cent of the government land. This government land is most likely to be used as one of the easy way to transform the urban land uses

The size of Ludhiana is increasing very fast as there is 307 per cent increase in the total land use of the city from 1991 to 2007. The large agricultural area of the city has been incorporated in the Local Planning Area (LPA) of the city. Ludhiana has been considered as a leading industrial city and an increment of 253.6 and 659.4 per cent for residential and industrial uses has been proposed respectively. The area under commercial is also proposed to increase 522.1 % while area under traffic and transportation is proposed to increase only 139.7 %

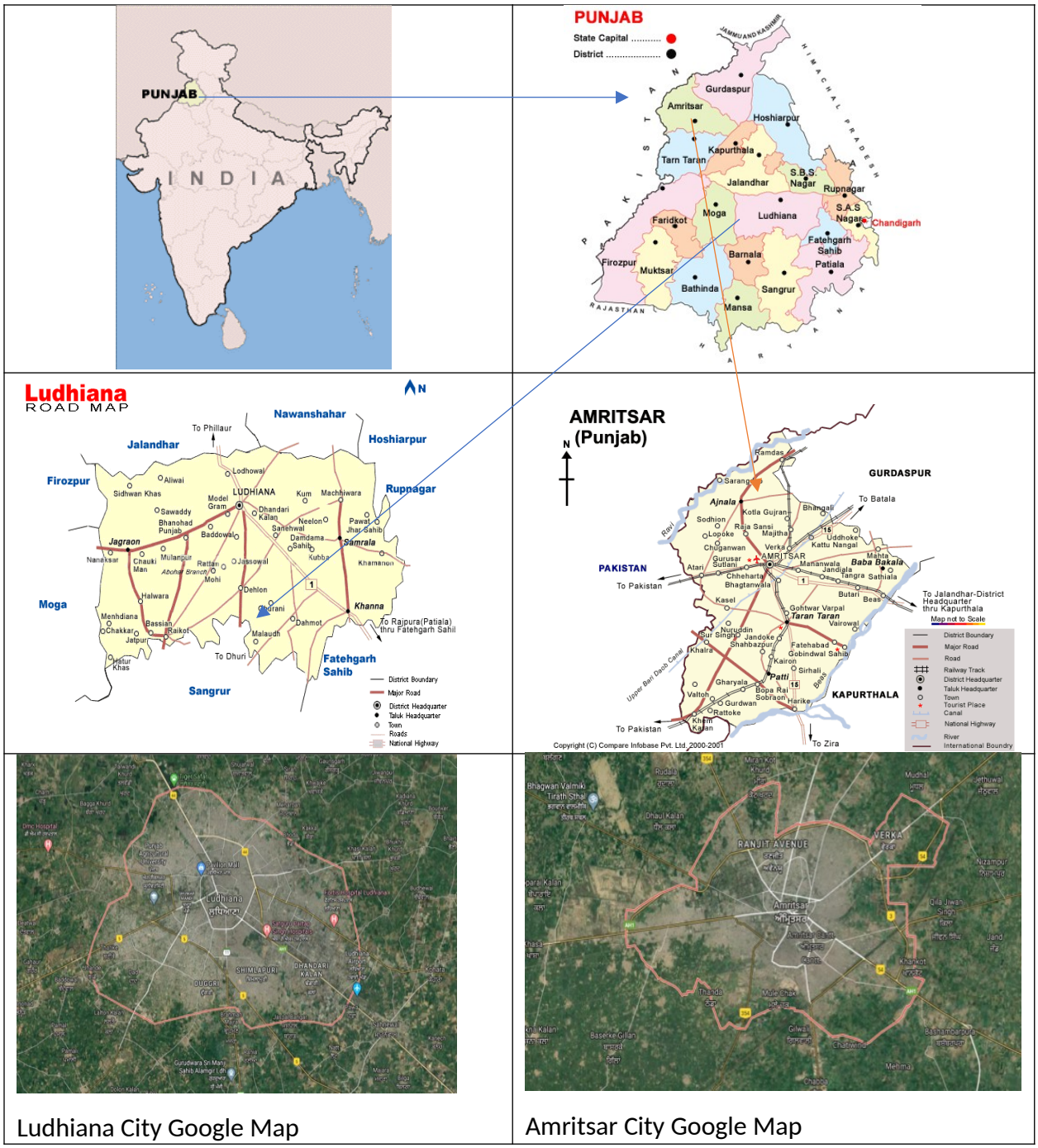


Figure 4.1: Map showing the study area and participating cities of Ludhiana and Amritsar

4.3 Environmental Baseline of Ludhiana

Ludhiana is the most centrally located district in the Malwa region of the state of Punjab. For administrative purposes it has been placed in the Patiala Division. It lies between north latitude 30°-34' and 31°-01' and east longitude 75°-18' and 76°-20'. It is bound on the north by the Satluj River, which separates it from Jalandhar district. The river forms its northern boundary with Hoshiarpur district. On other sides it shares common boundaries with Rupnagar district in the east, Moga district in the west, and Barnala, Sangrur and Patiala districts in the south and southeast, respectively. The city is located in district Ludhiana, which is the most centrally located district of the Punjab state.

Climate

The climate of the district is characterized by dryness except a brief spell of monsoon season in a very hot summer and a bracing winter. The cold season extends from mid-November to the early part of March. The succeeding period up-to the end of June is the hot season. July, August and half of September constitute the southwest monsoon. The period from mid-September to mid-November is considered as post monsoon. June is generally the hottest month. Hot and scorching dust laden winds blow during summer season. May and June are the hottest months with daily average temperature going up to 44°C and minimum average daily temperature as 24°C. Hot scorching dust laden winds blow during the summer season and on individual day the temperature sometimes goes up-to 45°C to 47°C. With the on-set of monsoons in July there is appreciable drop in temperature but due to increased moisture in the air the weather becomes uncomfortable. After monsoon in September the night temperature drops appreciably. December and January are the coldest months when the maximum average daily temperature is around 22°C and minimum about 6°C. The yearly variation is from 4.0°C min to 45°C max. Monthly average temperatures and rainfall of the area are given in Table 3.2. The normal annual rainfall of the district is 680 mm which is unevenly distributed over the area in 34 days. The south west monsoon sets in from last week of June and withdraws in end of September, contributory about 78% of annual rainfall. July and August are the wettest months. Rest 22% rainfall is received during non-monsoon period in the wake of western disturbances and thunderstorms. Generally, rainfall in the district increases from southwest to northeast.

Air quality

Station Name: - **United Cycle Parts Building, Gill Road, Ludhiana (Earlier Punjab Pollution Control Board Office, Gill Road, Ludhiana)**

Month	RSPM (µg/m³)					NO_x (µg/m³)					SO_2(µg/m³)				
	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
January	120	78	117	195	132	27	26	23	44	25	10	11	14	8	15
February	98	98	133	116	94	29	25	22	49	23	11	10	12	7	9
March	66	93	150	118	77	27	26	20	50	21	9	10	11	8	11
April	71	144	125	121	139	26	28	25	40	20	9	12	9	7	13
May	92	137	134	96	142	27	28	23	30	20	11	10	10	8	14
June	83	168	162	165	154	26	28	28	29	20	10	10	11	8	11
July	45	130	127	55	126	21	28	22	22	17	8	8	10	7	9
August	105	93	119	84	160	23	19	20	21	24	13	7	9	7	10
September	134	101	123	89	152	26	19	23	22	21	13	8	11	7	10
October	161	131	199	140	148	27	28	24	30	29	11	10	9	9	9
November	167	166	286	131	202	27	33	46	35	36	11	13	10	11	8
December	102	137	185	129	193	25	24	42	28	29	8	11	8	13	9
Annual Avg.	**104**	**123**	**155**	**120**	**143**	**26**	**26**	**27**	**30**	**24**	**10**	**10**	**10**	**8**	**11**

Source: Punjab Pollution Control Board (ppcb.gov.in)

The ambient air quality data observation as shown in Table 4.1, reflects the fact that dust level is higher in most locations mainly due to transportation and industrial sectors.

Table 4.1: Ambient air quality at Ludhiana

Hydrogeology

The subsurface geological formations of the study area comprise of sand, silt, clay and kankar in various proportions. In general, the ground water of the area is fresh as Industrial growth is less here. The aquifer disposition of the area is revealed by drilling data carried out down to 408 m by Central Ground Water Board and state govt. The lithological data of these boreholes indicate the presence of many sand beds forming the principal aquifers separated by clay beds at various depths.
The data indicates presence of about 5 prominent sand horizons down to 400 m depth separated by thick clay horizons.

1. The first aquifer generally occurs between 10 and 30m.
2. The second is between 50 and 120m.
3. Third between 150-175m.
4. Forth between 200- 250m and the fifth between 300- 400m.

The depth to water level in the region ranges between 20-30 meters. During the pre-monsoon period depth to water level varies between 2.89-27.30 m bgl and in post monsoon it ranges between 4.32 to 31.22 m bgl. The long-term water trend indicates that the water level showing decline ranges from 0.11 m /y -1.34 m/year.

Geomorphology and Soil
The area is occupied by Indo-Gangetic alluvium of Quaternary age and occupied by Indo-Gangetic alluvium. And there are no surface features worth to mention except that area is plain and some small natural drains. Soil is the end product of the parent material resulting from the consistent influence of climate, topography and the natural vegetation over a long period of time. In the study area soil characteristics are influenced to a very limited extent by the topography, vegetation and parent rock. The variations in soil profile characteristics are much more pronounced because of the regional climatic differences. The soil of this zone has developed under semi-arid condition. The soil is sandy loam with normal reaction (pH from 7.8 to 8.7).

Natural Calamity - Seismic activity & Flooding
Punjab is vulnerable to 21 types of hazards out of 33 identified by the High-Powered Committee (HPC) of Government of India into 5 sub-groups. Apart to identified hazard by HPC, state has high impact of Groundwater and Surface water Pollution, and depletion of groundwater level and which needs to be addressed as hazard. A major part of geographical area of the state is prone to floods although substantial part has been protected through flood control measures The State of Punjab suffers mainly from two natural hazards, namely, flood and earthquakes, of which floods have quite a high frequency of occurrence, whereas earthquakes of M > 5.0 have a moderate frequency within and close to the boundary of the State.

A major part of geographical area of the state is prone to floods although substantial part has been protected through flood control measures. Nevertheless, the protected area also faces risk, although in reduced magnitude, because of possibility of flood in case of failure of protection works. The district wise damage risk study shows high to very high from flood to a large number of houses and medium risks to many houses in the protected area from the consideration of possibility of failure of flood control works in extreme floods. As per records, about 62,000 houses are damaged due to floods annually on an average. The maximum damage of 627000 houses was reported in floods of 1955. Many flood control works including embankments have been constructed in the state. Possibility of failure of the works at vulnerable points is a major consideration for flood disaster mitigation. Also house constructions should follow the Guidelines and the settlement planning should be based on Land Use Zoning Guidelines.

Based on tectonic features and records of past earthquakes, a seismic zoning map of India has been prepared by a committee of experts under the auspices of Bureau of Indian Standard (BIS Code: IS: 1893: Part I 2002). In this seismic zoning map, most of the area of Punjab State lies in Zone III and IV. However, northern boundary of Punjab State with Himachal Pradesh is in close proximity to Zone V. The Zone III and IV are broadly associated with a seismic intensity VII and VIII on MMI scale respectively. From the earthquake hazard map given in the above, it is seen that about 50 percent of the area of the state in the north, consisting of Amritsar, Gurdaspur, Hoshiarpur, Jalandhar, Kapurthala, Ludhiana, Patiala and Rup Nagar districts is liable to MSK Intensity VIII and about 45 percent could have Intensity VII. An earthquake of M 5.5 occurred in Kapurthala district in 1952 and much larger earthquakes of M 7.0 to 8.0 have occurred in Himachal Pradesh at about 50 to 60 km from the State boundary, which could cause moderate to heavy damage in the districts of Gurdaspur, Amritsar and Hoshiarpur. The districts of Firozpur, Faridkot, Patiala, Mansa, Sangrur and Bhatinda lie in Zone III. The districts of Amritsar, Gurdaspur, Hoshiarpur, Jalandhar, Kapurthala, Ludhiana, and Rupnagar lie in zone IV.

Biodiversity

The area being mainly an agricultural one, vast tracts of land are under cultivation with the result that very little of the natural vegetation is left. Forested land is scarce. The dominant scattered trees in this area are Dalbergia sissoo (Shisham) and *Morus Alba* (Tut) with one or the other predominating in the different parts of the forest. The Willow, *Salix tetrasperma* (Baishi) is found in the low- lying areas. Other trees met with in the forest are *Prosopis spicigera* (Chhonkar or Jand) (Mesquite), *Acacia nilotica* (Kikar), *Parkinsonia aculeate* (Valaiti Kikar), *Leucaena leucocephala* (Valaiti banal) and *Ehria laevis*. The *Phoenix dactylifera* (Datepalm) (Pindkhajur) has been seen to invade parts of certain compartments in the parts of the forest and in some places has ousted the tree species altogether. The blanks in the forest are covered by *Desmostachya bipinnata* (dab grass). This grass sometimes chokes the seedling of the forest trees and thus interferes with their regeneration. Similarly, *Acacia farnesiana* and the *Phoenix dactylifera* often interfere with growth of more useful species in the Reserve Forest. The district, being a predominantly agricultural and heavily populated area, can boast of very little natural vegetation and forested land. As a result of increasing emphasis on intensive cultivation of available land and bringing more and more areas under the plough, even such pockets as may be described the habitat or sanctuary for wildlife have been eliminated during recent years.

Infrastructure

Overground infrastructure in the city is relatively in a good condition. However, most of the underground networks for water supply, sewerage and drainage are old and require dismantling and rehabilitation. Further detailed studies will be required to determine the future course of action for underground utilities. The road network is uniformly laid out but requires uplift in terms of streetscape, walking and bicycle paths, signage, wayfinding, landscape and urban design character. The area also has a number of health and education institutes like Govt. College for Boys, Swami Dayanand Medical College, Khalsa College and PAU adjacent to it. The area is of high importance in the city both locally and regionally due to its context and varied mix of uses. Interventions in this selected area would allow the SCP to have maximum citizen impact and allow for maximum visibility and regional recognition as a pilot area for Ludhiana City.

Total road network area is 12.7 Sq.Km. (8% of municipal area of 159.3 Sq.Km). 16 lakhs registered vehicles (annual growth rate of 9.79% or overall 711% in 21 years) and fleet of 150 buses running through LCBSL (MC). Ludhiana serves water through ground water (approx. 900 tube wells) and

NRW>20%. There is reduction in number of hours of water supply. Provision of online payment of water supply bills is available

Currently 2 waste dumping sites function at Jainpur, Jamalpur. Zone D disposes MSW at Jainpur while remaining 3 zones at Jamalpur site. Door to door collection by private parties increased from 10% to 24% (2012 to 2015) (SPV A2Z), whereas overall city-wide collection is 90%, Lifting from secondary dump points to landfill sites is 100% with deployment of additional machinery

Ludhiana is the first city in North India to be covered under ''Safe City Project'' with1700 CCTV cameras in phases covering 25 points of the city. The project will ensure proper surveillance and monitoring for public safety. Additional police patrol has been put in place for better surveillance. Surplus power is available in Punjab. Ludhiana has 24X7 power supply and improved its coverage to 100% of city area with 100% metered connection. City also achieved outages less than 6%. City is under process of GIS based digitization of entire power distribution network.

The city is spread over an area of 159.3sq.km. The present road network is spread over 12.72 sq.km of area, which accounts for 8% of the total municipal area. The total road length is 1356 km, and the equivalent road length is 3390 km. The city has roads ranging from 6 to 35 m width. The existing road network of Ludhiana is radial in pattern converging into the heart of the city. Ludhiana is located centrally in the State and hence very good connectivity to various important cities like Delhi and Chandigarh; cities of other states like Ambala, Shimla, and cities within the state like Jalandhar, Amritsar, Ferozpur, etc.

Socio-Economic Baseline of Ludhiana

Ludhiana city is the largest urban centre in terms of area and population. With a total area of 159.37 sq. km. the city is home to 1.6 million people and has 234,000 households. As per Census 2011, the decadal growth rate of the city (between 2001 and 2011) was 15.36 percent, suggesting inward migration. About 14 percent of the population of the city belongs to the Scheduled Castes. The presence of Scheduled Tribes in the city is negligible.

Demographic Profile:

With total population of 16,18,879 population size, Ludhiana is a well-known industrial hub and a home to the largest migratory population in the State. The density of population is reported to be 10,158 per sq. km which is highest in the state of Punjab.

Table 4.2: Demographic Profile of Ludhiana

Sr. No.	Indicators	Ludhiana Municipal Corporation
1	Total Population	1618879
2	Share of ULB population in Dist. Urban Population (%)	78.22
3	Area (sq. km)	159.37
4	Density of population (person per sq. km)	10158
5	Literacy rate (%)	85.77
6	Schedule Caste (%)	14.32
7	Schedule Tribes (%)	0
8	Youth, 15-24 years (%)	19.81
9	Slum Population (%)	15.08
10	Working age group, 15-59 years (%)	66.82

Source: Census of India, 2011

Economic Profile:

The per capita income within the Municipal limits are reported to be Rs. 51,633 against that of the State, which is reported to be Rs. 42,868. Similarly, the rate of urban poverty is reported to be about 9.51 percent.

Table 4.3: Economic Profile of Ludhiana

Sr. No.	Indicators	City (MC)
1	Per Capita Income (Rs.) at 2004-2005 constant price	51633
2	Urban Poverty (% of Urban Population)	9.51
3	Work Status: 2011-12 (%)	
	Self Employed	33.74
	Regular/ Wage salaried employees	63.6
	Casual labour	2.66
4	Sectoral Distribution of Workers, 2011-12 (%)	
	Primary	0.85
	Secondary	51.49
	Tertiary	47.66

Source: Census of India, 2011; Directorate of Economics and Statistics of Respective State Government and for all India-Central Statistics Office

Occupational Profile

As per the 2011 Census, total workers in the city are around 5 lakhs, of which nearly 80 percent are males. Out of the total workers in the city, nearly 82% (or 4.37 lakhs) are main workers. Amongst the main workers, males constitute nearly 84% of the work force. This indicates very low female workforce participation, especially in the organized sector. The number of marginal workers in the city was 57,000 of which 60 percent were male and 40 percent female. Women constitute more than 60 percent of non- workers in the city and also form a majority of marginal workers with seasonal employment.

Existing Land Use:

Ludhiana city has a mixed land use with agricultural land and water bodies comprising the major proportion of land use, followed by residential areas.

Table 4.4: Ludhiana City - Land Use Pattern

S No	Land Use Category	Area (in hectares)	Percent of Total Area
1	Residential	12273	9.65
2	Commercial	851	0.67
3	Mixed land use	1277	1.01
4	Industrial	3251	2.56
5	Recreational	300	0.23
6	Traffic & Transportation	4275	3.36
7	Utilities	150	0.12
8	Government	502	0.40

9	Public & Semi-public	1952	1.53
10	Agriculture & Water Bodies	102291	80.47
TOTAL		**127122**	**100.00**

Source: Draft Master Plan for Ludhiana 2007

Literacy:

Average literacy rate of Ludhiana in 2011 was 82.2 percent as compared to 76.50 in 2001. Male and Female literacy rates were 85.98 and 77.88 in 2011 respectively. For 2001 census, same figures stood at 80.30 and 71.90 in Ludhiana District. Total literate in Ludhiana District were 2,560,225 of which male and female were 1,428,348 and 1,131,877 respectively *(Source: Census of India, 2011)*.

Sex Ratio:

The sex ratio was 873 (females per 1000 males) in 2011 against 824 in 2001 *(Source: Census of India, 2011)*. Similarly, in the category of child sex ratio (0-6 age), 860 was reported in 2011 against 817 in year 2001 indicating a marginally improving sex ratio in the city.

Urban Poverty

As per estimates, poverty in the urban areas of Ludhiana district (comprising the municipal areas) is estimated to be around 9 percent. This is almost double the poverty in the rural areas of the district. Within the city, there are pockets where the incidence of poverty is as high as 50 percent, suggesting high inequality in income distribution.

As per Census 2011, at least 15% of Ludhiana's estimated population of 1.6 million live in slums; this does not include a significant number of the homeless and others from non-notified slums who remain outside the purview of municipal records. Absence of safe portable water, sanitation and toilets, waste collection and other civic amenities in slums make the quality of life poor.

Rapid growth of the city has resulted inward migration of poor population from less developed areas of Punjab and states like Bihar, UP, Haryana and Rajasthan. Due to low income levels and inadequate housing facilities, several slum clusters have mushroomed in and around the city to accommodate these migrants.

Tourism:

According to the Department of Statistics at Punjab Heritage and Tourism Promotion Board (PHTPB), about 32 lakh Domestic Tourist Visits (DTV) and 23,000 Foreign Tourist Visits (FTV) were reported to have visited Ludhiana city in year 2014. Ludhiana is the second most visited district and Punjab's major business centre, accounting for 15.22% of the Domestic Tourist Visits and 11.35% of the Foreign Tourist Visits.

4.4 Environmental Baseline for Amritsar

Climate

The climate of the Amritsar is characterized by general dryness except in the brief South –West Monsoon season, a hot summer and bracing winter. The year may be divided in four seasons. The cold season is from November to March. The period from April to June is the hot season. The South- West Monsoon season is from about the beginning of July to the first week of September. The succeeding period lasting till the beginning of November is the post-monsoon or transition period. The project zone lies in the sub-tropical region with four distinct seasons similar to Ludhiana. From about the end of

March, temperatures increase steadily till June which is the hottest month with mean daily minimum at 25.2^{0}C. The heat during the Summer is intense and the hot dust laden winds which blow during the afternoons add to the discomfort with the onset of the Monsoon in the district by about the end of June or the beginning of July, there is appreciable drop in the day temperature. The nights are, however, as warm during the Monsoon as in summer and due to the increased moisture in the Monsoon air, the weather is often oppressive. After the withdrawal of the Monsoon early in September while the day temperatures remain as in the Monsoon season, nights become progressively cooler. From October, there is a rapid drop in the temperatures. January is generally the coldest month with the mean daily maximum at 4.50C. During the cold season, the district is affected by cold waves in the rear of passing western disturbances and the minimum temperature occasionally drops down to a degree or two below the freezing point of water. Frosts are common during the cold season.

The average annual rainfall in the Amritsar is 541.9 mm. The rainfall in the district increases generally from the South-West towards the North-East and varies from 435.5 mm at Khara to 591.7 mm at Rayya. About 74 per cent of the annual normal rainfall in the District is received during the period June to September and as much as about 13 per cent of the annual rainfall occurs during the period December to February. The variation in rainfall from year to year is large. In the 50-year period 1901 to 1950, the highest annual rainfall amounting to 184 percent of the normal occurred in 1917, while the very next year was one with the lowest annual rainfall which was 54 per cent of the normal.

Ambient Air quality

In Amritsar, there is 1 continuous air monitoring station (CAMS) reporting data for all the criteria pollutants and 3 manual stations reporting data on RSPM, SO2, and NO2. Ambient Air Quality of Amritsar indicates pollution and the level of parameters like PM2.5 and PM10 are higher than prescribed limits. However, all other parameters are well within the limits.

Table 4.5: Ambient air quality in Amritsar

Station Name**: - Punjab Pollution Control Board, R.O. Building, Plot No. 164, Amritsar (Earlier Nagina Soap Factory, Batala Road, Amritsar)**

Month	RSPM (µg/m³)					NO_x (µg/m³)					SO_2(µg/m³)				
	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
January	202	246	310	170	199	39	40	41	29	32	14	17	14	11	13
February	195	225	135	173	123	38	38	34	30	29	13	17	12	13	12
March	184	225	198	146	163	37	39	35	35	33	12	18	12	12	11
April	208	239	213	159	163	39	39	36	37	37	14	17	13	13	12
May	210	-	192	205	198	40	-	36	39	38	14	-	12	13	13
June	188	208	-	230	179	39	36	-	38	39	13	14	-	12	13
July	181	128	153	168	162	37	33	28	33	36	13	12	12	12	13
August	141	152	143	133	113	37	32	30	34	33	13	11	12	13	12
September	153	217	140	128	138	38	34	30	35	33	14	11	11	11	12
October	180	211	216	198	143	37	40	34	30	35	13	13	13	12	14
November	194	231	361	252	178	38	40	43	32	33	14	13	14	12	13
December	190	310	188	194	183	39	41	30	31	35	15	14	11	12	13
Annual Avg.	**186**	**217**	**204**	**180**	**162**	**38**	**37**	**34**	**34**	**34**	**14**	**14**	**12**	**12**	**13**

Source: Punjab Pollution Control Board (ppcb.gov.in)

Hydrogeology

The district forms part of Uppar Bari Doab and is underlain by formations of Quaternary age comprising of alluvium deposits belonging to vast Indus alluvial plains. Sub surface geological formations comprise of fine to coarse grained sand, silt, clay and kankar. Gravel associated with sand beds occurs along left bank of Ravi. The beds of thin clay exists alternating with thick sand beds and pinches out at short distances against sand beds. Central Ground Water Board has carried out ground water exploration up to a depth of 450 meters at village Kohala (Lopoke) in Chogwan block. Total thickness of alluvium is expected to be more than 450 m as bedrock has not been encountered up to that depth.

Geomorphology and Soil

Amritsar District falls in between Ravi River and Beas River. Ravi river flows in North West of the district and forms International Border with Pakistan. Beas River flows in the Eastern part of the District. Soils in the western part of the district are coarse loamy, calcareous soils, whereas in the central part of the district soils are fine loamy, calcareous and are well drained.

Depth to water level in the district ranges from 11.61 to 24.30 m BGL during pre-monsoon period and between 12.26 to 24.04 m BGL during post monsoon period. Water level in the northern and eastern part of the district comprising Ajnala, Chogawan and Harsha China blocks are less than 15 m while in Verka, Majhitha, Jandiala, Raya and Tarsikka blocks it is > 20 m. The net replenishable ground water availability in the district has been assessed as 123026 ham. Gross ground water draft for all uses in the district is 220547 ham, leaving a shortfall (overdraft) of 100214 ham. Ground water development in all the blocks has exceeded available recharge; hence all the blocks have been categorized as over exploited. The stage of ground water development ranges from 161 % (block Rayya) to 199 % (block Jandiala). The stage of ground water development in Amritsar district has been assessed as 179 %.

Biodiversity

The area being mainly a modified urban area, with the result that very little of the natural vegetation is left. Forested land is absent. The various trees planted in Amritsar are Ficus infectoria (Pilkhan), Terminalia arjun (Arjan), Terminalia bellirica (Behada), Schleichera trijuga, Melia azedarach (Drek) , Grevillea robusta (Silver oak), Bombax ceiba (Simal), Putranjiva roxbhurgii (Putranjiva), Chukrasia tabularis (Chikrasi), Ficus religious (Pipal), Ficus benghalensis (Bor), Syzigium cumini (Jamun), Anthocephalus cadamba (Kadamb), Delonix regia (Gulmohar), Ficus glomerata (Goolar), Michelia champaca (champak), Mimusops elengi (Maulsiri), Sterculia alata (Buddha's coconut) etc. The fauna in the area consists of House crow (Corvus splendens); Myna (Acridotheres tristicus); Pigeon (Columba livia); House Rat (Rattus rattus); Hare (Lepus vigricollis); Parrot (Psittacula kraweri); Indian cuckoo (Megalaima merulinus); Common Bee-eater (Merops orientalis); Partridge (Francolinus pondicerianus) and other common domesticated animals as cows, bulls, buffaloes, pig etc.

Socio-Economic Baseline of Amritsar

Amritsar is a city in North-Western India which is the administrative headquarters of the Amritsar District located in the Majha region of the Indian state of Punjab. The city origin lies in the village of Tung and was named after the lake founded by the fourth Sikh Guru Ram Das in 1574. As per the 2011 census, Amritsar municipality had a population of 1,132,761.

Population Trends

As per Census 2011, the total population of Amritsar City was 13.34 lakhs and the total number of households was 273,000. The decadal growth rate of the city (between 2001 and 2011) has been 15.47 percent, suggesting inward migration towards this urban centre. About 23 percent of the population of the city belongs to the Scheduled Castes. The presence of Scheduled Tribes in the city is negligible.

Literacy

The total literacy of the city is 74.5 percent, with male literacy at 77 percent and female literacy standing at 72 percent. The gap in female literacy rates is 5%.

Sex Ratio

The city of Amritsar is showing a declining sex ratio over the decades. In 2001, the sex ratio in the city was 889 females for every 1000 males. This decreased to 871 females for each 1000 males in 2011. Nearly 10.4 percent of population of the city is under-5 years of age. The city has a high dependency ratio (total number of non-workers dependant on total number of workers) of 214 against the state average of 167.

Population Density

The total area of Punjab is 50,362 sq. km with a population density of 551 persons per sq km in 2011. This is higher than the national population density of 382 persons per sq. km. Amritsar city has an average population density of 928 persons /sq.km, which is far higher than both the State's and India's population density respectively.

Existing Land Use

As per the existing Land Use Plan-Amritsar M.C (2010), 58.54% of the total municipal corporation area is built over while the remaining 41.5% of the area is under agriculture, allied use or is vacant land. Water bodies constitute approximately 1 percent of total land area available.

The existing area under commercial and industrial use constitutes 5.89% of the total developed area of Municipal Corporation Amritsar, while Traffic and Transportation takes nearly 10 % of the total developed area of the city, which comprises roads, railway line, terminals such as bus stand, truck stand, railway station, airport and parking lots/areas existing in the Amritsar city. (Source: City Hriday Plan 2010 Volume I)

Table 4.6: Land Use Pattern in Amritsar

S No	Land Use Category	Percent of Municipal Area
1	Residential	29.82
2	Commercial	2.76
3	Industrial	3.13
4	Mixed land use	0.47
5	Public and Semi Public	5.19
6	Govt land	6.12
7	Utilities and Services	0.19
8	Traffic and Transportation	9.75
9	Recreation and Open spaces	0.88
10	Special Areas	0.16
11	Agriculture	35.10
12	Water bodies	1.08
13	Plantations and Orchards	1.95

Source: Draft Master Plan for Amritsar (2010-31)

Occupational Profile

As per the 2011 Census, total workers in the city are around 5 lakhs, of which nearly 80 percent are males. Out of the total workers in the city, nearly 82% (or 4.37 lakhs) are main workers. Amongst the main workers, males constitute nearly 84% of the work force. This indicates very low female workforce

participation, especially in the organized sector. The number of marginal workers in the city was 57,000 of which 60 percent were male and 40 percent female. Women constitute more than 60 percent of non-workers in the city and also form a majority of marginal workers with seasonal employment.

Distribution of workforce as per industry / activities

About 93% of the workers in Amritsar city are engaged in tertiary activities, 4% in household industry and 3% in primary activities working as cultivators or agricultural labourers. Out of the total workers in Amritsar city, 26.96% are engaged in wholesale and retail trade followed by 21.94% in manufacturing, processing and repairs industry and 20.67% in public administration and others since Amritsar is also the district headquarter and an important administrative city. There has been a recent spurt in the number of workers in the construction, manufacturing processing and repair industry (household industry). Though this provides high employment, it is also a source of high pollution in the residential areas.
More than 99% of the industries in Amritsar city (17,985 in nos.) are small scale manufacturing units and provide employment to more than 81,772 workers. This constitutes more than 70 percent of the industrial employment in the entire district

Urban Poverty

According to (BPL) Below Poverty Line Survey of Amritsar City (conducted in 2006 during preparation of the City Development Plan) a total of 16,655 households i.e. 95,200 persons constituting 9% of city population fall under BPL category.

Between the period 1981- 2011 the number of slum dwellers in Amritsar city has increased from 32,632 (1981) to 332,274 (2011), recording more than ten times increase in slum population. The total slum population, constitutes approximately 29.33 percent of total 2011 population (*Census 2011*). As per the Draft Amritsar Master Plan 2011 (prepared by the Town and Country Planning Department under the MCA), the slum population of the city was 4,07,428 persons spread across 63 slum settlements. This constitutes more than one-third of the total population in the city.

Apart from these 63 notified slums, there are about 446 unauthorized colonies within the municipal limits and its periphery lacking basic infrastructure and amenities. The decadal growth of slum population is 55 percent as compared to 15.47 percent for the entire city.

Looking at spatial distribution of slums, majority of them are located in the southern part, close to the walled city. Concentration of slums on the southern part was largely on account of haphazard and unplanned development in the area besides absence of major development schemes. On the other hand, northern side is better placed due to lesser number of slums. This is due to the fact that majority of development schemes and development took place in the northern part. About 71.87 percent of the slum population has access to safe drinking water whereas 28.13 percent population is still dependent upon make-shift arrangements. Nearly two-fifths residents of the slum belong to the scheduled castes. (*Source: Municipal Corporation*, *Amritsar-Survey on Slums 2011*).

Access to Basic Services

Water supply: The total distribution network existing in the Amritsar City is 1,264 km in length. Under Phase I and Phase II of the AMRUT program 324 Kms of additional pipelines are planned to be laid. The existing water supply system covers about 83% of city. As per MCA records, the total registered water supply connections in Amritsar City is 203,833, constituting nearly 65% of the total water supply connections in the city.

Sewerage: Amritsar City has 1,410 kms of sewerage network. The sewerage network coverage as per SLIP Report is 78 %.

Tourism

Amritsar is an important tourism destination for both domestic and foreign tourists owing to the presence of several religious and historical sites. According to Department of Statistics at Punjab Heritage and Tourism Promotion Board (PHTPB), about 1.1 crore Domestic Tourist Visits (DTV) were reported in Amritsar city in 2014 and 1.75 lakh Foreign Tourist Visits (FTV). These constituted more than 55 percent of the domestic tourists and more than 85 percent of the foreign tourists visiting the state.

CHAPTER 5: ASSESSMENT OF POTENTIAL ENVIRONMENTAL AND SOCIAL RISKS & IMPACTS AND MITIGATION PLAN

5.1 Environmental and Social Risks and impacts of PMSIP

The proposed project will bring significant benefits to the local population in Ludhiana and Amritsar by shifting water supply from heavily Arsenic contaminated ground water to treated, safe surface water. While Components 1 and 3 of the proposed project have limited or no environmental risks, Component 2 of the project involves civil works that is limited to (a) construction of water intakes from canals; (b) construction of water treatment plants (including pumping stations); (c) laying of clean water transmission lines between WTPs and Overhead Service Reservoir (OSRs); and (d) construction of new OSRs and repairs of existing OSRs.

The adverse environmental impacts related to Component 2 activities include: (i) sludge from the WTPs during operation phase; (ii) emission of dust, noise, debris, waste products during construction; and (iii) health and safety of workers and traffic disruption during construction of WTPs and OHSRs. Potential adverse impacts due to land purchased for WTP in Amritsar would include adverse livelihood impacts on the households selling the land, impacts on agricultural laborers and other users of the land who may have to find alternative livelihoods or whose livelihoods will be partially affected.

The PMSIP activities will be a source of environmental and social impacts & risk and they will be limited and largely localized and temporary. The potential environmental impacts and risks for sub-projects and proposed mitigation measures are summarized in Table 5.1 below in reference to the World Bank's applicable ESSs.

Table 5.3: Environmental and Social Risks and Impact Mitigation Plan

ESS	World Banks Environmental and Social Standards	Risks and/or Impacts	Mitigation Measure	Instruments applicable
1	Assessment and Management of Environmental and Social Risks and Impacts	1. improving water supply in Amritsar and Ludhiana will involve tapping of water from existing irrigation canals, construction of WTPs (400 MLD and 600 MLD), additional storage reservoirs and replacement/ laying of new water distribution networks 2. Abstraction of water from canal may have downstream impacts on other users like farmers, etc. 3. Upgrading and rehabilitation of community health facilities to respond to Covid 19.	1. Identify, evaluate and manage the environment and social risks and impacts of the project in a manner consistent with the ESS and applicable National regulation 2. Evaluation of allocation data and cumulative impacts 3. Develop monitoring plan and audits 4. Outline Institutional responsibility and capability building	1. ESMF 2. ESIA 3. ESCP 4. ESMP
2	Labor and Working Conditions	1. Staff handling and exposure to hazardous waste will cause occupational health, EHS risks. 2. Influx of migrant labour, communicable diseases 3. Gender based violence 4. Conflict with local community 5. Conflict of locals with security at site	1. Equip workers with appropriate Protective Personal Equipment 2. EHS guidelines to be followed, trained and awareness among workers 3. Provide first aid kit at all times in construction sites. 4. Conduct health screening during induction; 5. Regular training & awareness about health and safety 6. Use clear markings and signage in all areas of construction sites 7. Cordon off all waste storage and disposal sites adequately from the public 8. Conduct gender analysis, establish grievance mechanism, and prepare labour management plan to addresses gender based violence and conflicts.	5. LMP
3	Resource Efficiency & Pollution Prevention and Management	1. 2. Air pollution may arise from the indiscriminate open air burning during site clearance. 3. Air pollution could also occur from using diesel	1. Avoid indiscriminate burning of wastes at site to reduce air pollution. 2. Dispose wastes at least once a week 3. Dispose all waste to an approved storage	To be included in ESMP

CHAPTER 6: FRAMEWORK PROCEDURES FOR ENVIRONMENTAL AND SOCIAL MANAGEMENT

This chapter contains a summary of the screening procedure, capacity building activities, ESMP and implementation budget. It also provides necessary procedures and tools for screening and assessing environmental and social impacts. The environmental and social assessments need to be carried out based on the provisions of the National laws and the relevant World Bank's Environmental and Social Standards. The Environment and Social Management Framework Procedure specifies measures for addressing the negative risks and impacts and for enhancing the beneficial impacts. In addition, organisational capacity and training requirements, required to check and ensure effectiveness of the plan throughout the lifecycle of the project, have also been discussed.

6.1 Environmental and Social Management procedures

The overall environmental and social management procedure is shown in the figure 6.1 below. After a sub-project has been developed with outline design and location/alignment options, screening of environmental and social risks can be done. This will help in the preparation of E&S instruments such as ESIA and ESMP. The recommendations from these E&S documents need to be incorporated by the detailed design team and also incorporated into the tender (bidding) documents. After selection of the contractor(s), site preparation activities will commence and at the same time ESMP implementation will begin. This will involve carrying out the proposed mitigation measures, monitoring and reporting activities for the sub-project.

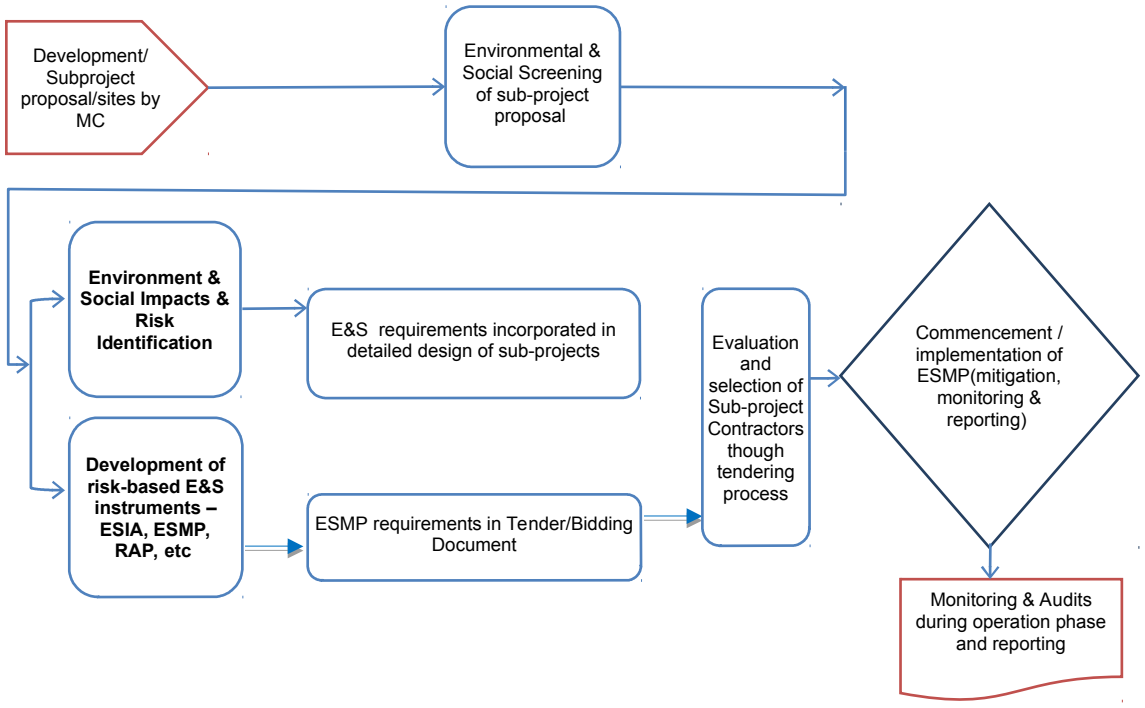


Figure 6.1 : Environmental and Social Management Procedure

6.2 Sub project Screening and Categorization

The proposed project will have only 2 major sub-projects of similar nature in 2 different cities, related to creation of water treatment facilities and its provisioning for household supplies (upto the regional OHSRs). However, their scale of operations will differ. As a result, the magnitude of E&S impacts is also likely to differ based on the narrative in which these sub-projects will be implemented. Therefore, elaborate guidance is being provided in this section for risk screening, categorisation and management of E&S risks likely to emerge from project investments in these 2 sub-projects and also to guide any future changes/ additions to the project components.

All sub-projects, including the OSR development, will require screening, which will be conducted by the Local Governments/MCs themselves, before submission to PMIDC. The environmental and social assessment will commence with the Environmental and Social Screening of proposed interventions. Screening formats are given in **Annex 1**. The scale of subproject activities is expected to be moderate to high in a few cases, although the anticipated impact is not expected to be unprecedented, diverse or complex. The impacts can be managed locally using environmental and social mitigation plan.

6.3 Approach to Categorization of Sub-Projects

Environmental and social risk screening and classification of sub-projects take into account relevant potential risks and impacts, such as:

1. the type, location, sensitivity and scale of the sub-project ;
2. the nature and magnitude of the potential E&S risks and impacts, including impacts on greenfield sites; impacts on brownfield sites including (e.g., rehabilitation, maintenance or upgrading activities); the nature of the potential risks and impacts (e.g. whether they are irreversible, unprecedented or complex); resettlement activities; presence of Indigenous Peoples; and possible mitigation measures considering the mitigation hierarchy;…construction risks..labor…stakeholder engagement…risk of conflicts…
3. the capacity and commitment of the Borrower to manage such risks and impacts in a manner consistent with the ESSs, including the country's policy, legal and institutional framework; laws, regulations, rules and procedures applicable to the Project sector, including regional and local requirements; the technical and institutional capacity of the Borrower; the Borrower's track record of past Project implementation; and the financial and human resources available for management of the Project;
4. other areas of risk that may be relevant to the delivery of ES mitigation measures and outcomes, depending on the specific Project and the context in which it is being developed, including the nature of the mitigation and technology being proposed, considerations relating to domestic and/or regional stability, conflict or security.

The outcome of the screening process is to categorize the sub-project in terms of its environmental and social risks. PMSIP sub-projects will be categorized as: High, Substantial, Moderate or Low based on ESSs of WB and as per National Regulation categories as: A, B1 & B2. Thus, considering potential environmental impacts and their significance, proposed sub-project interventions identified in the initial stage of implementation will be categorized into four levels

1. **High Risk** - Projects with potential significant adverse social or environmental risks or/and impacts that are diverse, irreversible or unprecedented.
2. **Substantial Risk** - Projects with potential moderate adverse social or environmental risks or/and impacts that are moderate in number, mostly irreversible and possible addressed through mitigation measures.
3. **Moderate Risk** - Projects with potential limited adverse social or environmental risks or/and impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures.
4. **Low Risk** - Projects with minimal or no adverse social or environmental risks or/and impacts, including certain financial intermediary (FI) projects with minimal or no adverse risks.

Subsequently, it is required to carry out environmental and social assessment (ESIA) which is materially consistent with the objective to manage potential environmental and social impacts commensurate to the scale and nature of the sub-project according to the World Bank's ESF. MC will identify, manage and mitigate environmental and social impacts based on the magnitude and nature of potential impacts.
6.4 Procedure for Impact assessment of project activities

The project will have overall positive impacts by providing and improving water supply to the households. It will certainly meet the ever-increasing demand of water that will bridge the gap between demand and supply. However, there will be some adverse potential environmental & social impacts due to sub-project activity during construction and project operation phases. During the construction phase, the impacts may be regarded as temporary or short-term.

6.4 Risk Significance Evaluation Matrix

Significance evaluation matrix as shown in Table 6.2. will be used to evaluate the significance of identified potential environmental impacts. This matrix includes criteria as discussed above to analyse the significance of impact. Colour codes have been given to signify the impact intensity.

Table 6.1: Phase wise Procedures for different Risk categories of Projects

Sub-Project Phase	**Procedures**			**Responsibility**
	High and Substantial Risk Projects	Moderate Risk Projects	Low Risk Projects	
Project Identification / Pre-Feasibility	Social and Environmental Screening of project (Annex 1)	Social and Environmental Screening of project (Annex 1)	Social and Environmental Screening of project (Annex 1)	PMU, PIU
	Consultations with key stakeholders (as per SEP)		Consultations with key stakeholders (as per SEP)	PMU, PIU
	Preparation of ToR for ESIA (outline provided in Annex)		Prepare preliminary ESMP (outline provided in Annex)	Prepared by PMU, reviewed and cleared by the WB
Feasibility Study / Design	Conduct ESIA (provided in Annex)	Conduct IEE/ESA and prepare ESMP	Update ESMP based on design	Prepared by Independent consulting firm,

Sub-Project Phase	Procedures			Responsibility
	High and Substantial Risk Projects	Moderate Risk Projects	Low Risk Projects	
				reviewed an cleared by WB
	Public consultations (as per SEP)	Public consultations (as per SEP)	Review and modify ECOPs (provided in Annex)	PMU, PIU
	If required, prepare RAP following the RPF prepared for the project (sample in Annex).	Review and modify ECOPs (provided in Annex)		PMU, PIU, independent consultant
	If required, prepare Cultural Heritage Management Plan.			PIU, MC, independent consultant
Detailed Design & Tendering	Ensure Mitigation measures (from ESMP) are included in Design	Ensure Mitigation measures (from ESMP) included in Design	Ensure Mitigation measures (from ESMP) included in Design	PMU, PMU
	Ensure ESMP and LMP aspects are included in Bidding Documents	Ensure ESMP and LMP aspects are included in Bidding Documents	Ensure ESMP and LMP aspects are included in Bidding Documents	PMU
Construction Works	Implement and monitor ESMP	Implement and monitor ESMP	Implement and monitor ESMP	PMU, PMC
	Update ESIA (and ESMP) as required	Update IEE (and ESMP) as required	Update ESMP as required	PMU, MC, independent consultant
Post-Construction	ESMP Audit (by PMU)	ESMP Audit (self-audit by PMU)	ESMP Audit (self-audit by PMU)	PMU

6.5 Country regulation compliance

The legislations relevant for environmental impact assessment for proposed investments are listed in Chapter Four. Punjab State Impact Assessment Authority (SIAA), Department of Environment (DoE), under the Ministry of Environment, Forest & Climate Change (MoEFCC), are the regulatory body responsible for enforcing compliance & permitting. The emission standards and enforcing is conducted by CPCB & Punjab SPCB. It is the responsibility of the PMIDC as a proponent to conduct an EIA of sub-projects, if required, the responsibility to review EIAs for the purpose of issuing Environmental Clearance Certificate rests with MOEF&CC.

Table 6.2: Typical Environmental and Social Framework Management Plan

Project Activity	Potential/ Expected Environmental & Social Risk and Impacts	Proposed Mitigation	Institutional Responsibility	Monitoring Duration (Start-End)	Indicator Parameter	Frequency of monitoring	Location	Record Keeping
Project Phase: Construction								
Acquisition of land for WTP, etc		The process to be followed for voluntary transactions, including and how those will be compensated to potential sellers will be as per and consistent with ESS5 principles. The term and condition should be transparent and mechanism to monitor the compliance should be put in place. The agreed compensation amount should not be lower than what is available under eminent domain to ensure fair compensation under voluntary land transaction. The seller To mitigate the risk under this approach, the voluntary land transaction should be completed and land transferred in favor of Government prior to invitation of bids. Separate RPF for the project and RAP for Amritsar will be prepared to cover the potential land acquisition and resettlement impacts.	Implementing Agency	Prebid	As per ESS5		WTP, tanks	IA
Site Clearance (clearing of the site so that it	Potential increase in soil erosion	Restrict site clearance to the required extent as part of the design	Planners	From commencement of Site Clearance Activities till end of site clearance	Site Clearance Area (m2)	During each phase of the project	Project Area	Daily logbook stating clearance done
	Vegetation loss (mainly grass/shrubs but	Preserve trees, if present, as far as practicable	Primary: Construction I/C		Vegetation Loss Area (m2)	During phases of the project	Project sites	Map and list of trees and vegetation at the site prior to

Project Activity	Potential/ Expected Environmental & Social Risk and Impacts	Proposed Mitigation	Institutional Responsibility	Monitoring Duration (Start-End)	Indicator Parameter	Frequency of monitoring	Location	Record Keeping
becomes accessible for further works)	also possibly some trees) in Transmission line route & OHSR sites		Secondary: Planners	activities		requiring clearance of vegetation		commencement of field activities; details of trees / vegetation being cut (if any)
	Waste generation (vegetation as well as boulders / stones)	Segregation of wastes Utilization of boulders / stones as construction materials or for cut and fill Dispatch of vegetation for further utilization	Construction I/C		Waste type, quantity generated	Daily	Project site area being cleared	Storage, reuse or disposal proof (manifests)
	Air Pollution due to vehicular movement, and dust emissions from debris stockpiles	Water sprinkling Compaction of soil Covering of debris and waste stockpiles Ensure well maintained vehicles Ensure reduced idling time for vehicles Barricading of portion of site where work is being carried out Ensure that trucks plying in the area are loaded to rated capacity optimize number of trips	Primary: EHS Supervisor Secondary: Construction I/C		Air: PM2.5, PM10, PM2.5, SO2, NOX and CO	Air: Once a week for 48 hours continuously	Air: 100 m from the edge of the clearance area	Keeping record water quantity used for sprinkling, By keeping record of air monitoring analysis results
	Noise from vehicles, Clearing and cutting activities	Barricading of portion of site where work is being carried out Operations to be carried out during the day time only Equipment and vehicles to be operated as per standard noise level (<85 dB(A) at 1.5 m from source) Ensure that trucks plying in the area are loaded to rated capacity optimise number of trips	Primary: EHS Supervisor Secondary: Construction I/C		Noise: dB(A) Leq (night) and dB(A) Leq (day)	Noise: 24 hours, once a week	Noise: At the site nearest to the location where works are going on	Record of noise monitoring analysis results
	Water pollution (of the canal) due to intake point site	Suitably manage the solid wastes, debris generated as per regulatory requirements	Contractor		SS, pH, TDS, COD, BOD, Chloride,	Water Pollution: Once in a	Water: At the intake project site	Water quality records

Project Activity	Potential/ Expected Environmental & Social Risk and Impacts	Proposed Mitigation	Institutional Responsibility	Monitoring Duration (Start-End)	Indicator Parameter	Frequency of monitoring	Location	Record Keeping
	clearance activities				Sulphates, O & G	week	wherever the works are going on	
Intake Point Development in Canal	Aquatic and canal bottom impact	Construction of temporary separation/isolation walls will reduce impact.	Project I/C Civil works	From commencement of Intake point development till end of activities				
	Water pollution (of the Canal) due to Intake point development activities	Suitably manage the solid wastes generated from the construction activities as per regulatory requirements Prevention of washing and cleaning by workers during construction in the canal	Primary: EHS Supervisor Secondary: Construction I/C		SS, pH, TDS, COD, BOD, Chloride, Sulphate, O & G	Water Pollution: Once in a week	Water: At the project site where Upstream/ downstream	Random checking around river side By keeping record of surface water sample analysis results
Mobilization of Construction Equipment and Materials	Congestion and risk of accidents due to increase in vehicles and machines, and traffic	Stage delivery of required materials and equipment Store all construction equipment and materials at “off road” sites Post signs along the roads Move heavy machines only early mornings and late evenings	Primary: EHS Supervisor Secondary: Construction I/C	From commencement of transportation till end				Trained staff for traffic management and control
	Air Pollution due to vehicular movement, and dust emissions	Water sprinkling Ensure well maintained vehicles Ensure reduced idling time for vehicles Barricading of portion of site where loading and unloading carried out Ensure that trucks plying in the area are loaded to rated capacity optimize number of trips Dry and dusty materials stored in sealed containers or prevented from blowing Material will be covered during transportation except iron rods, pipes, steel	Primary: EHS Supervisor Secondary: Construction I/C		Air: PM2.5, PM10, PM2.5, SO2, NOX and CO	Air: Once a week for 48 hours continuously	Air: 100 m from the edge of the clearance area	Air quality records

Project Activity	Potential/ Expected Environmental & Social Risk and Impacts	Proposed Mitigation	Institutional Responsibility	Monitoring Duration (Start-End)	Indicator Parameter	Frequency of monitoring	Location	Record Keeping
		Traffic controlled by trained staff						
	Noise from vehicles, power sources (DG sets) and trenching activities	Barricading of portion of site where loading and unloading is being carried out Installation of equipment with noise enclosures (mufflers) as far as possible Operations to be carried out during the day time only Equipment and vehicles to be operated as per manufacturer's maintenance schedule Traffic Signage will be placed at several places within premises	Primary: EHS Supervisor Secondary: Construction I/C		Noise: dB(A) Leq (night) and dB(A) Leq (day)	Noise: 24 hours, once a week	Noise: At the project boundary nearest to the location where works are going on	Maintain register for working hours Trained staff for traffic management and control Noise data
WTP Construction	Soil Pollution due to Construction materials especially cement should not spill on soil as it is highly alkaline and may deteriorate soil Pollution on adjacent land parcels	Spillage should be controlled by using tarpaulin Reuse in reclaimed area, stored separately.	Primary: EHS Supervisor Secondary: Construction I/C	From commencement of construction activity to till end of construction	pH, Exchange Sodium Percentage	Soil Sample collection : Once in a month	Soil: 100 m near site	By keeping record of Soil analysis result
	Water Pollution due to construction material spill and leakages to ground water	Reuse in reclaimed area, stored separately.	Primary: EHS Supervisor Secondary: Construction I/C		SS, pH, TDS, COD, BOD, Cloride, Sulphate, O & G, Turbidity, Alkalinity	Water Pollution: Once in a week	Water: At project site wherever the works are going on	By keeping record of Surface Water analysis result
	Air Pollution due to vehicular movement, and	Water sprinkling Ensure well maintained equipment's Ensure reduced idling time for vehicles	Primary: EHS Supervisor Secondary:		Air: Pm2.5, PM10, PM2.5, SO2, NOX and	Air: Once a week for 48	Air: 100 m from the edge of	Air quality records

Project Activity	Potential/ Expected Environmental & Social Risk and Impacts	Proposed Mitigation	Institutional Responsibility	Monitoring Duration (Start-End)	Indicator Parameter	Frequency of monitoring	Location	Record Keeping
	dust emissions	Barricading of portion of site where loading and unloading carried out Ensure that trucks plying in the area are loaded to rated capacity optimise number of trips Dry and dusty materials stored in sealed containers or prevented from blowing Material will be covered during transportation except steel, iron, pipes, etc Traffic controlled by trained staff	Construction I/C		CO	hours continuously	the clearance area	
	Noise from vehicles, power sources (DG sets) and other activities	Barricading of portion of site where loading and unloading is being carried out Installation of equipment with noise enclosures (mufflers) as far as possible Operations to be carried out during the day time only Acoustic Enclosure will be provided around D.G. Set Proper Traffic Signage will be placed at several places within premises	Primary: EHS Supervisor Secondary: Construction I/C		Noise: dB(A) Leq (night) and dB(A) Leq (day)	Noise: 24 hours, once a week	Noise: At the project boundary nearest to the location where works are going on	Checking commencement time and end time of machineries Noise monitoring analysis results
Influx of construction workers	Risk of Communicable Diseases increased pressure for water Health and safety issues Workers at risk from accidents Environmental, health & safety	Contractors should be encourage to recruit locals; Initial screening of workers health f Provide camp clinics and regular screening for infection Provision of drinking water and sanitation facility Follow Occupational Health and Safety Plan, prescribed work safety measures; Workers must be informed of risks at workplace, Minimize hazards at the	Contactor					Record of incidents

Project Activity	Potential/ Expected Environmental & Social Risk and Impacts	Proposed Mitigation	Institutional Responsibility	Monitoring Duration (Start-End)	Indicator Parameter	Frequency of monitoring	Location	Record Keeping
	issues	workplace, Use signage and barricades at risky sites, Ensure proper transportation, storage of hazardous, materials, Maintain record of accidents, Personal Protective Equipment's (PPEs) such as helmets, ear plugs and safety goggles shall be provided to the construction workers as per their job profile and its usage shall be ensured and supervised. First Aid room with First Aid Kit will be provided and basic first aid training to supervisors will be given. There will be a Doctor on call whose number will be circulated with all workers. Safety Harness or scaffoldings will be used during work on height Effective gender mainstreaming, GBV impacts , accessing project benefits to vulnerable and disadvantaged groups will be explored as part of ESIA process and mitigation measures will be proposed in ESMP.						
	Water Pollution : water quality impact due to waste generation from construction camps	Prevent washing of equipment / vehicles / clothes directly on the canal & local water bodies Set up a suitable water collection, treatment and storage facility for the construction phase to supply water for construction. Provide suitable sanitation facilities to all	Primary: EHS Supervisor Secondary: Construction I/C		SS, pH, TDS, COD, BOD, Cloride, Sulphate, O & G	Water Pollution: Once in a week	Water: At the project site wherever the works are going on and at the inlet	Water sample analysis result

Project Activity	Potential/ Expected Environmental & Social Risk and Impacts	Proposed Mitigation	Institutional Responsibility	Monitoring Duration (Start-End)	Indicator Parameter	Frequency of monitoring	Location	Record Keeping
		personnel staying at the site . Establish and maintain a wastewater treatment plant that ensures that discharged water meets norms set by the local authorities Re-use treated wastewater for sprinkling of flushing purposes Suitably manage the solid wastes generated from the waste water treatment facilities as per regulatory requirements					and outlet discharge point of treatment plant	
OHSR development	Air Pollution due to vehicular movement Demolition of old reservoirs	Traffic controlled by trained staff Appropriate stack height will be provided if DG set is used as power back up	Local administration	On regular basis as per describe for each parameter	Air: PM2.5, PM10, PM2.5, SO2, NOX and CO	Air: Once in a six months	Air: Site	By keeping record of Air monitoring analysis results
	Noise Pollution due to vehicular movement and Labour activities	Traffic controlled by trained staff Acoustic Enclosure will be provided around D.G. Set if used Proper signage for entry, exit & vehicle's parking No horns in sensitive zones			Noise: dB(A) Leq (night) and dB(A) Leq (day)	Noise: 24 hours, once in a six month	Noise: Site	By keeping record of noise monitoring analysis results
	Visual Aesthetics, Restriction to movement, traffic	Prior, transparent information disclosure, schedule of work Traffic management, Alternate routes Barricading of construction sites Grievance resolving	Primary: EHS Supervisor Secondary: Local Administration & Construction I/C	Regular checking and taking feedback from local community		Regular inspection	Site & surrounding	Feedback & Grievance records
	Soil Pollution due to improper demolition,	The solid waste/debris will be segregated, recyclable waste will be sold off to authorized recyclers and the	Local administration		Exchange Sodium Percentage,			By keeping record of solid waste segregation and

Project Activity	Potential/ Expected Environmental & Social Risk and Impacts	Proposed Mitigation	Institutional Responsibility	Monitoring Duration (Start-End)	Indicator Parameter	Frequency of monitoring	Location	Record Keeping
	construction/solid waste management	biodegradable waste, if any, will be collected and disposed as per local norms			Electric Conductivity			disposal. Soil data
Clean Water Transmission	Air Pollution due to trenching , borrowing, top soil removal storage, vehicular movement, traffic congestion, wind-blown dust	Prior information to local community & feedback mechanism Water sprinkling Ensure well maintained equipment's Ensure reduced idling time for vehicles Barricading of portion of site where loading and unloading carried out Soil management, cover & prevent spillage on road Dry and dusty materials stored in sealed containers or prevented from blowing Material will be covered during transportation except steel, iron, pipes Traffic controlled by trained staff	Primary: EHS Supervisor Secondary: Construction I/C	From commencement of construction activity to till end of construction	Air: PM2.5, PM10, PM2.5, SO2, NOX and CO	Air: Once a week for 48 hours continuously	Air: 100 m from the edge of the clearance area	Air quality records
	Noise from vehicles, power sources (DG sets if used) and labour other activities	Barricading of portion of site where loading and unloading is being carried out Installation of equipment with noise enclosures (mufflers) as far as possible Operations to be carried out during the day time only Acoustic Enclosure will be provided around D.G. Set Proper Traffic Signage will be placed at several places within premises	Primary: EHS Supervisor Secondary: Construction I/C		Noise: dB(A) Leq (night) and dB(A) Leq (day)	Noise: 24 hours, once a week	Noise: At the project boundary nearest to the location where works are going on	Checking commencement time and end time of machineries Noise monitoring analysis results
	Visual Aesthetics, Restriction to movement, traffic	Prior, transparent information disclosure, schedule of work Traffic management, Alternate routes Barricading of construction sites Grievance resolving	Primary: EHS Supervisor Secondary: Local Administratio	Regular checking and taking feedback from local		Regular inspection	Site & surrounding	Feedback & Grievance records

Project Activity	Potential/ Expected Environmental & Social Risk and Impacts	Proposed Mitigation	Institutional Responsibility	Monitoring Duration (Start-End)	Indicator Parameter	Frequency of monitoring	Location	Record Keeping
			n & Construction I/C	community				
Incomplete removal of Project/ construction materials	Risk of soil, water, waste impacts from residuals left after project completion	Clean-up of all worksites/work camps after project completion	Contactor			Site Inspections		
Project Phase: Operation								
WTP	Water pollution due to runoff of WTP effluent into surface water bodies Runoff from solid waste storage	Suitably manage the WTP effluent, solid wastes, debris generated as per regulatory requirements	O&M Staff/ Operator/ PIU		SS, pH, TDS, COD, BOD, Chloride, Sulphates, O & G	Water Pollution: Once in a week	Water: ETP analysis, inlet & outlet	Water quality records
	Sludge generation, Ground water contamination by percolation of solid/ hazardous waste dumps leachate	Solid & hazardous wastes to be handled, identified segregated, stored, transported & disposed as per the National regulation, MoEFCC CPCB guidelines Storage of hazardous wastes, sludges on impermeable material & isolated	O&M Staff/ Operator/ PIU		pH, TDS, Chloride, Sulphates, Heavy metals, Organics	Every month	Site well, nearby wells	Water quality records
	Air Emission and Community risk due to Chlorine leakage	Disaster Management Plant & Emergency Preparedness	Operating Unit/ Local administration	Regular checking & maintenance	Leak test parameters	Every week	Refill system, Storage tanks & delivery system	Checking records

Project Activity	Potential/ Expected Environmental & Social Risk and Impacts	Proposed Mitigation	Institutional Responsibility	Monitoring Duration (Start-End)	Indicator Parameter	Frequency of monitoring	Location	Record Keeping
	Downstream impact due to extraction of water	Estimation of different competition users downstream including for irrigation, and to maintain flow sustainable even after projected population and water supply till 2055	IA, irrigation Dept.	Flow check downstream , allocation/ abstraction data, spl. During lean seasons	Flow rate downstream	Quarterly/ lean season		

6.6 Monitoring Frequency

Contractor EHSS Officers would be on site on a daily basis or otherwise defined in the ESMP's mitigation measures to inspect active work sites and verify compliance with all applicable mitigation measures for the work phase. PIU Environmental and Social Experts shall monitor the site on a quarterly basis during civil works or more frequently if the risk profile warrens it. More frequent monitoring may be conducted if needed to ensure compliance with the mitigation measures and resolution of any issues that are noted.

6.7 Project and Activity Reporting

Reporting system for the suggested monitoring programme operates at two levels:

1. Reporting for environmental condition indicators as well as environmental and social management indicators
2. Reporting for operational performance indicators at the level of PIU

This reporting will be as follows:

1. Reporting by the Contractor to the PMC.
2. Reporting by PMC to PIU (AMC).
3. Reporting by PIU (MC) for the information of all interested parties, including PMU (PMIDC).

Table 6.3: Reporting System

Items	Contractor	Project Management Consultant		PIU		World Bank (WB)
	Implementation & Reporting to PMC	**Supervision**	**Reporting to PIU**	**Oversee Compliance Monitoring**	**Report to WB**	**Desired Supervision**
Construction Stage						
Monitoring of WTP/ OHSR Construction Site Trenching/Pipeline Route and Construction Camp	Before start of work	Regular	Monthly		Quarterly	Quarterly
Pollution Monitoring	As required	As required	Quarterly	Quarterly	Quarterly	Quarterly
Debris Disposal Area	Weekly	Regular	Monthly	Quarterly	Quarterly	Quarterly
Monitoring of Enhancements	Implementation	As required	Quarterly	Quarterly	Quarterly	Yearly
Tree Cutting	-	-	-	Quarterly	Quarterly	Yearly
Operation Stage						
Pollution Monitoring				As per monitoring plan	-	-

Table 6.4: Summary Details of Reporting Formats

Format No.	Item	Stage	Contractor	Project Management Consultant (PMC)	
			Implementation & reporting to PMC	Supervision	Reporting to PIU
MF 1	Approval of Construction Camp/ WTP/OHSR Site/ Pipeline Row and its Management Plan	Pre-Construction	One Time	One Time	One Time
MF 2	Construction Camp and Site Management	Construction	Monthly	Regular	Quarterly
MF 3	Pollution Control and Construction sites	Construction	Monthly	Regular	Quarterly
	Pollution Monitoring	Construction and Operation	-		Quarterly
MF 4	Vehicles and Pollution Control	Construction	Monthly	Regular	Quarterly
MF 5	Details of the DG Sets and Pollution Control	Construction	Monthly	Regular	Quarterly
MF 6	Working at Canal & Pollution Control	Construction	Monthly	Regular	Quarterly
MF 7	Details of Water Extraction	Construction	Monthly	Regular	Quarterly
MF 8	Details of Personal Protective Equipment	Construction	Monthly	Regular	Quarterly
MF 9	Status of Consent for Water Extraction	Construction	Quarterly	Quarterly	Quarterly
MF 10	Deviations and Corrective Actions	Construction	—	Monthly	Quarterly
MF 11	Implementation of Enhancement Measures for Cultural Properties, Water Harvesting Structures	Construction	Monthly	Regular	Quarterly
RF 12	Grievance Redressal Mechanism during Construction	During Construction	Monthly	Regular	Quarterly
RF 13	Work Force Management	During Construction	Monthly	Regular	Quarterly
RF 14	Occupational Health Safety Measures	During Construction	Monthly	Regular	Quarterly
RF 15	Road Safety Measures	During Construction	Monthly	Regular	Quarterly
RF 16	Accidents Reporting	During Construction	Monthly	Regular	Quarterly
RF 17	Monthly Reporting	During Construction	Monthly	Regular	Monthly (as an ANNEX to progress report)

The Environment Specialist of PMC can make required changes in the formats of ESMP to ensure effective reporting of environmental issues. For making any required changes in the frequency of

reporting and change in the contents of the report for effective and simple for implementation and monitoring, PMC should discuss the reporting formats with the Contractor and PIU. This will not only ensure that the environmental provisions are addressed but also link the satisfactory compliance to environmental procedures prior to approval of the Interim Payment Certificate (IPC) by the Engineer. In the regular monthly meeting, the environmental aspects should also be discussed and the staff responsible for the implementation of the environmental management from the Contractor, PMC should also be present.

6.8 Disclosures of E&S Instruments

The ESMF has been developed using desktop studies, project details studies, secondary baseline data analysis, preliminary field visit and discussion with project stakeholders and other interested parties. . Copies of this ESMF, like other E&S instruments (such as ESIAs/ESMPs) that would be prepared for this project and all its sub-projects will be made available to the public by the PMIDC, MCL, MCA. The PMIDC will disclose the ESMF as required by the World Bank Disclosure Policy. Copies of other E&S instruments (such as ESIAs, ESMP, SEP, LMP, RAP) should be disclosed in a similar manner. Table 6.5 below outlines documents to be disclosed.

Table 6.5: Disclosure of E&S Instruments/ Reports

S/N	TOPIC	DOCUMENTS TO BE DISCLOSED	PROJECT PHASE	FREQUENCY	MEDIA
1	Stakeholder Engagement/Public Consultation	Minutes of formal public consultation	Pre-appraisal	Within two weeks of meeting	PMIDC, PMSIP Website if available, Local government,
2	Environmental & Social Management	ESMF, Report & Environment and Social Management Plans (ESMPs)	Implementation	Prior to awarding works and to remain on website	PMIDC, PMSIP Website if available, Local government, World Bank.
3	Resettlement Policy Framework for the project / Resettlement Action for the sub-projects	RPF/RAP	Pre-appraisal	Prior to appraisal and award of DBOT contract	PMIDC, PMSIP Website, LMC/MCA websites
4	Outcomes of Community monitoring	Citizen Report Cards / Social Audit Reports	Implementation	Annual	PMIDC and LMC/MCA websites
5	E&S Documents	Implementation Progress reports on ESS	Implementation	Monthly and Quarterly	LMC/MCA websites

6	Project Stakeholder consultations	Summary reports on Stakeholder consultations	Implementation	As and when conducted	LMC/MCA websites
7	Studies and Consultancies commissioned	RAP / EMP monitoring reports, other studies commissioned	Implementation	As and when conducted	LMC/MCA websites

Managing E&S Impacts on Associated facilities

It is proposed that the OHSRs (connected to the WTP via transmission network), will be either be newly constructed under the project, existing storage reserviors or new constructions under other schemes like Smart City Mission (SCM) or Atal Mission for Rejuvenation and Urban Transformation (AMRUT). The PMSIP will not finance the connection of OHSR with households. A detailed assessment will be required to understand if such convergence actions qualify as Associated Facilities under ESS1 and whether such activities would need to follow Bank procedures under the E&S requirements. Moreover, it is highly likely that there will be planned activities under AMRUT and Smart City Mission projects in both Amritsar and Ludhiana cities that will be considered as associated facilities. For example, the Municipal Corporation of Amritsar plans to construct 11 to 13 of the proposed 57 OHSR s planned under the World Bank Project through the AMRUT Program. As these OHSR s would be a critical part of the entire network served by the World Bank Project, these would be associated facilities and hence would need to come under the purview of all the ESSs relevant to this project. Similarly, the Smart City Mission is planning to do trenching work alongside the main road encircling the densely populated walled city in Amritsar. These trenches will serve multiple purposes, including accommodating the water transmission lines from PMSIP. This might also be associated facility as per the ESF.

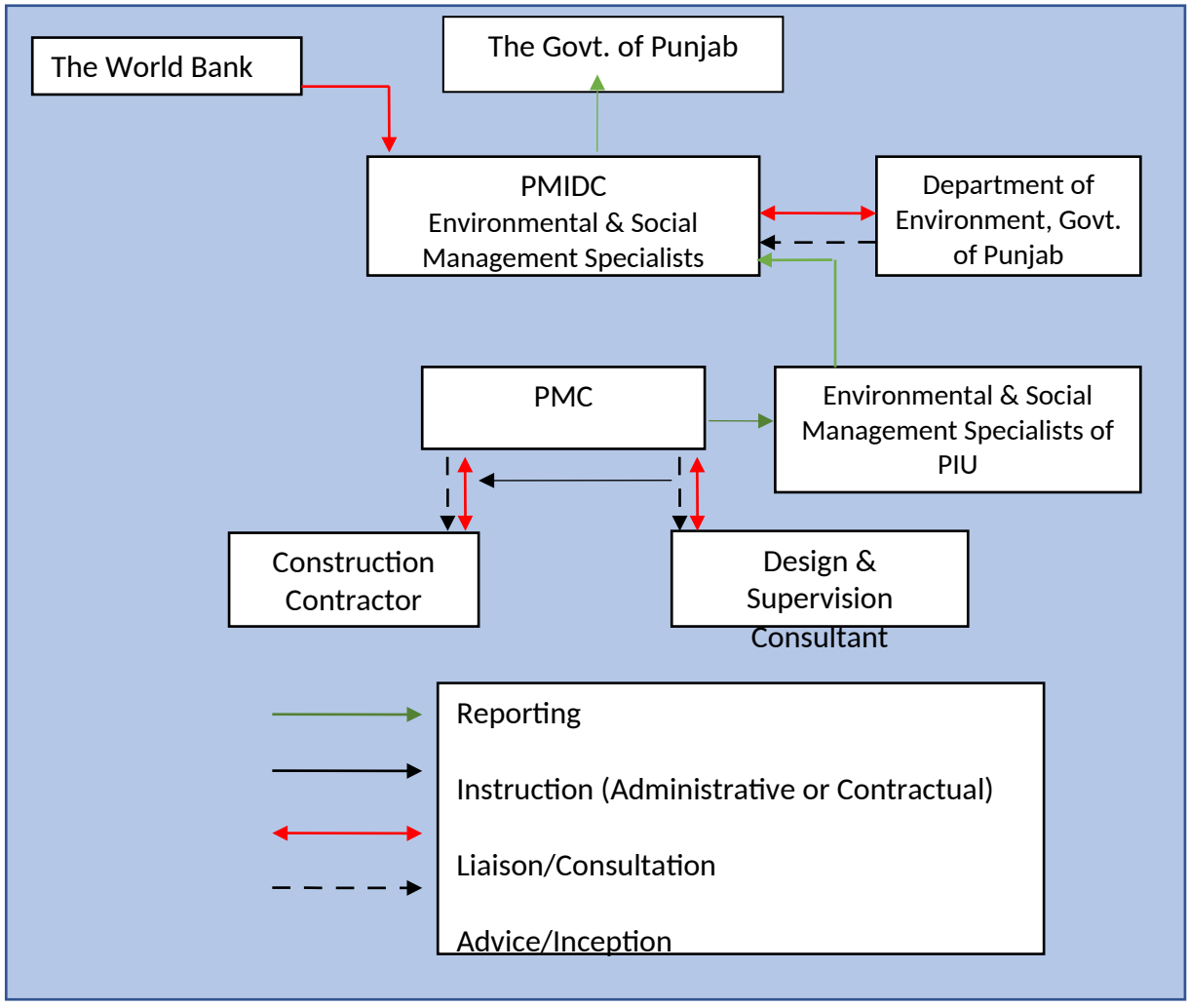
Screening mechanisms will be employed for determining if a city level water project/structure that is not funded by PMSIP needs to considered as an associated facility based on guidance under ESS1. The client will need to assess all such activities/structures and take necessary measures to adopt similar environmental and social impact assessment, mitigation and management planning as outlined in this ESMF and detailed in the ESIA. The project will be required to apply the ESF to all activities idenfied as being associated facilites as per the screening exercise.

CHAPTER 7: INSTITUTIONAL ARRANGEMENT

7.1 Institutional Arrangement in project implementation

The key institutions relevant for ESMF implementation are shown in the below figure. Reporting, instructions, liaison/consultation and advice/inspection channels are also shown. PMU/PIU/PMC of the project has the most important role for ESMF implementation and updating. In addition to the deployment of E&S specialists described in the figure below, each implementing agency at the city level PIU (within the respective municipal corporations) will also have additional Environment and Social staff to manage and monitor the management measures proposed by this ESMF, which will be further specified in the sub-project ESMPs. Apart from this, the Project Management Consultant and the DBOT Contractors will also have their own E&S Officers/ managers to monitor and implement the E&S measures spelt out by the ESMP and the bids for their respective contracts.

Figure 7.1: Institutional arrangement for project implementation



7.2 Key Institution Roles and Responsibilities

PMIDC is the State Level Institution that implements urban reforms and investment programs. Consistent with this role, PMIDC will act as the nodal agency and Project Management Unit (PMU) for this Project and will be responsible for implementing relevant environmental and social standards under the current project. It will also also be responsible for supporting Municipal Corporations (MCs) in implementing environmental and social management at the city level.

Discussion with Officers of PMIDC and MCs shows that there is no clearly defined institutional setup to supervise and manage the environmental and social activities under the project. The present capacity of PMIDC and Municipal Corporations to manage E&S risks and impacts is limited. While both cities are currently implementing urban reforms and infrastructure development schemes like Smart Cities Mission (SCM) and AMRUT and they employed part- time environmental and social experts to manage E & S risks, the overall capacities to manage E&S impacts remain weak. Neither PMIDC nor MCs has experience with World Bank Financed Project. It is envisaged that both the PMIDC and MCs will augment their capacities for managing E&S impacts and risks as part of project preparation, with the support being provided by the SCM, project under the MCs in the two cities. A PMU is proposed to be established in PMIDC and PIUs in the cities within 30 days of the project effectiveness to strengthen subproject preparation and implementation, including hiring of environmental and social specialists. It is expected that such specialists will be hired locally. The composition E&S specialists in PMU and PIUs will be decided after deeper institutional assessment is conducted as part of project appraisal. The findings will be incorporated in the ESMF and the ESCP.

Table 7.1: Roles and Responsibilities of Key Institutions

Organization	**Responsibility**
PMIDC (PMU)	1. Prepare and implement the ESMF and submit for Bank approval 2. Disclose the ESMF on PMIDC, PIU website. 3. Prepare ESMPs according to ESMF 4. Perform the quality control and review of ESMPs. 5. Perform inspections of the implementation of ESMPs, make recommendations and decide whether additional measures are needed. 6. In case of non-compliance, ensure that the agreement with beneficiaries and procurement eliminates the noncompliance and inform the WB about the noncompliance and follow up. 7. Prepare, update and implement a Stakeholder Engagement Plan (SEP) that considers vulnerable groups in addition to paying attention to the gender aspect of the Project. 8. Guide and monitor the preparation of project level LMP, SEP, RPF, ESCP and sub-project level RAPs, ESMP, their finalisation, consultations around these instruments with relevant stakeholders and their disclosure by the PMU and PIUs. 9. Preparation of budgets for various E&S measures proposed for the project and its approval and release to the PIUs 10. Seek periodic reports from the PIUs on E&S measures, monitor their implementation and provide feedback
Construction Contractor	1. The contractor shall develop sub-project specific ESMP before construction, as part of their method statement and submit to PIU for reviewing and approval; 2. The contractor has to submit a monthly report on E&S issues, mitigation, and results throughout the construction period. In case of unexpected problem, the

Organization	Responsibility
	contractor will consult PIU and PMC; 3. Ensure that the construction work will complied with the approved EIA/EMP and the site EMP; 4. Control and minimize environmental impacts; 5. Ensure that all staff and workers understand the procedure and their tasks in the environmental management program; 6. Ensure environmental hygiene. 7. Preparation of RAP based on a detailed socio-economic survey along the projects corridor/ area of impact under guidance from E& S specialists in the PIUs 8. Implementation of RAP under the guidance from PIU and in close coordination with the state agencies mandated for R&R
City ULB (PIU)	1. In order to effectively manage ESMP implementation, an ESMP management team will be established to oversee implementation of the DBOT contract. 2. Project lead at the PIU will be the head of this team and will be assisted by the PMC. 3. Hold consultation meetings and prepare and distribute leaflets or other informative documents to inform communities. 4. Set up a multi-level GRM, monitor and address grievances related to the project under specified timelines. 5. Ensure preparation of all sub-project level E&S instruments as defined by World Banks E&S standards including the RAP, ESMP and other instruments deemed to be necessary based on detailed risk assessment done through ESMP 6. Ensure availability of adequate financial resources for preparation and implementation of E&S measures through preparation of annual budgets/ financial planning for seeking resources from the PMU/PMIDC. 7. Closely work with the PMC consultants and monitoring agencies engaged by the project to monitor the implementation of EMP, RAP, GBV mitigation plan and all other plans/ measures proposed under the project
Project Management Consultants (PMC)	1. Responsible for monitoring the contractor's activities and to ensure adequate implementation of the ESMP by contractor. 2. Providing guidance to the PMU regarding any environmental and social issues which may arise during pre-construction and construction phase. 3. Keep track of contractor's day to day activities, their commitment for implementation of ESMP, quality of work, adherence to safety guidelines and method statements. 4. Review the Environment Management Action Plan (EMAP) submitted by contractor and should check adequacy as per the ESMP for this project. This EMAP should be amendable and can be updated time to time by PMC 5. Evaluate Safety, Health and Environmental (SHE) plan covering various construction activities, health of workers/ laborers to be submitted by contractor for each activity. This plan should include evacuation plan, emergency management & response plan 6. Ensure that all construction and site vehicles should abide by the latest emission norms of the country. 7. Monitor that all workers & labor of contractor should have valid ID cards to assess the site. 8. Monitor that adequate safety trainings are being given to the workers, adequate mock drills are conducted at site by contractor, availability of emergency evacuation plan, emergency assembly area, availability of certified first aid trainer at all the

Organization	Responsibility
	construction site 9. Recommend to the PMU to take action in case of non-compliance of ESMP & SHE Plan

7.3 Training and Capacity development

PIU should ensure that the job specific training and EHS Induction training needs should be identified based on the specific requirements and existing capacity of site and project personnel (including the contractors and sub-contractors). Special emphasis shall be placed on traffic management, stakeholder's engagement and grievance redressal. General environmental awareness shall be increased among the project's team to encourage the implementation of environmentally sound practices and compliance requirements of the project activities. This will help in minimizing adverse environmental impacts, ensuring compliance with the applicable regulations and standards, and achieving performance beyond compliance. The same level of awareness and commitment shall be imparted to the contractors and sub- contractors prior to the commencement of the project.

Environment and social management training programmes shall be conducted to ensure effective implementation of the management and control measures during construction and operation of the project. The training programme shall ensure that all concerned members of the team understand the following aspects:

- Purpose of action plan for the project activities;
- Requirements of the specific Action Plans
- Understanding of the sensitive environmental and social features within and surrounding the project areas;
- Aware of the potential risks from the project activities.
- A basic occupational training program and speciality courses shall be provided, as needed, to ensure that workers are oriented to the specific hazards of individual work assignments.
- Training shall be provided to management, supervisors, workers, and occasional visitors to areas of risks and hazards.
- Workers with rescue and first-aid duties must receive dedicated training so as not to inadvertently aggravate exposures and health hazards to themselves or their co-workers.
- Through appropriate contract specifications and monitoring, the employer shall ensure that service providers, as well as contracted and subcontracted labour, are trained adequately before assignments begin.

The training programme will be implemented as per training modules provided in ANNEX 6. These training programme are not part of the Contractors plan and estimates but will be a part of the project cost that includes institutional strengthening, capacity building and training. Training module can be changed during construction phase based on requirements by ESMU. The basic objective of giving training to different Stakeholder is to enhance their capabilities for implementation of Environmental Management and Monitoring Plan. It is recommended that training be given at least 4 times both off-site and on site.

1. Before Start of Construction Work
2. During Construction
3. Before demobilization of Contractor

4. After Construction before Start of Monitoring

7.4 Estimated Budget for Implementing the ESMF

Necessary budgetary provisions must be made for implementing environmental and social measures of sub projects as part of the ESMF. This enables preparedness for financial requirements and allows early planning and appropriate budgeting. Each sub project includes the environmental management costs other than good engineering practices and cost of environmental and social monitoring. It is estimated that the cost of implementing the ESMF is **dollars Six Hundred and Ten thousand (USD 610,000) – an equivalent of four crores and thirty three lakh and ten thousand India rupees (INR 4,33,10,000)**. The breakdown is shown in Table 7.3 below

Table 7.2: Summary of indicative budget breakdown and responsibility of the cost for implementing the ESMF instruments

S/N	ITEM	RESPONSIBILITY	COST BREAKDOWN	ESTIMATE (US$)	ESTIMATE (INR)*
1	Mitigation	Contractors, MC		175,000	1,24,25,000
2	Management	State/PMIDC steering committee	5% of Mitigation Cost	75,000	53,25,000
3	Capacity Building	PMIDC, MCL, MCA		200,000	1,42,00,000
4	Preparation of ESIA/ ESMP etc	Consultant	This estimation includes cost for reconnaissance survey, field studies, public consultations and report preparation etc	100,000	71,00,000
5		**Sub Total**		**550,000**	**3,90,50,000**
6		Contingency	10% of Sub Total	**55,000**	**3,90,500**
			TOTAL	**610,000**	**4,33,10,000**

** Conversion at 1USD= INR 71.00*

CHAPTER 8: STAKEHOLDER ENGAGEMENT AND GREVIANCE REDRESSAL MECHANISM

At State level, the PMIDC is responsible for coordination of PMSIP and while at the City level, similar responsibilities lie with the Municipal Corporations of Ludhiana & Amritsar. Therefore, the PIU of the two participating cities will have the responsibilities of engaging stakeholders in the sector within their various cities.

8.1 Objectives

This framework is designed to achieve effective stakeholder involvement and to promote greater knowledge, awareness and better understanding of project and project goals. This is in a bid to ensure the project is carried out effectively within budget and agreed timelines.

The following principles should be at the forefront of the Local authority when carrying out consultations

1. Promotion of easiest means and modes of communication;
2. Openness to the true state and plan of the PMSIP;
3. Ensuring effective and deep-rooted involvement of all stakeholders in the development of the project;
4. Helping and increasing relevant stakeholders understanding of the project implementation processes;
5. Using all strategies and techniques that provide prompt and adequate opportunities for all stakeholders to get involved in the project; and
6. Evaluating the effectiveness of the engagement plan against the expected outcomes.

8.2 Stakeholder Identification

For the PMSIP, stakeholders shall be defined as every individual, institution and group that has an interest in the successful planning and subsequent execution of this project and those that might put at risk or affected by the project. There must not be discrimination between those likely to be positively affected by the project and those that are likely to be negatively affected. Rather a harmonious consultation must be on the front burner.

During preparation of the ESIA and ESMF under the present study, all the stakeholders will be primarily synthesised into two categories that have been identified as:

1. Project-affected parties: those who are or likely to be affected by the project, and
2. Other interested parties: who may have an interest in the project and who could Influence the opinions of affected parties either positively or negatively, or affect the implementation process or the sustainability of the project's outcomes

Project-affected parties

The city municipal area will be exposed to potential risk and impacts due to the project implementation. Therefore, there will be negatively affected local communities, either directly or indirectly. They will constitute the project affected parties.

Other interested parties

The projects' stakeholders including local people, BPL families on or close to transmission ROW, land owners, house owners, civil society organizations, locally active NGOs, government officials, farmers, transport owners, women and vulnerable groups, squatters, encroachers, hawkers, etc. will be impacted during construction of the project directly or indirectly due to Labour influx and other activities.

Table 8.4: Stakeholder Identification

AFFECTED PARTIES	IDENTIFICATION METHOD
Project affected parties	1. Identify the local government areas that falls within a 500 meter radius of the proposed health facility and along the transmission line ROW 2. Use already identified individuals to identify other individuals and groups 3. Use identified groups to access other groups and individuals 4. Review of available data to assess relevant individuals and groups
Other interest parties	5. Identify pivotal individuals or groups through formal groups, local clubs, community halls and religious places 6. Be aware of similar groups or individuals including slum dwellers, BPL households and others
Disadvantaged / vulnerable individuals or groups	Vulnerable individuals or groups who often do not have a voice to express their concerns or understand the likely project impacts

Approach to identification of vulnerable and disadvantaged groups to benefit from positive benefits of the project – Identification of vulnerable and disadvantaged groups along the transmission pipeline route, record type and numbers, type of vulnerability expected – consultation, them according to type, namely, BPL households, those living in slums, etc. Follow up consultations with other groups/individuals can be considered as vulnerable and disadvantaged in the context of project based on the views from stakeholders.

8.3 Information Disclosure and Consultation

A combination of mixed methods of information disclosure and consultation process will be adopted at this stage of ESIA preparation. The methods used in the consultation process will be: (i) Key Informants Interview (KII),
(ii) Public Consultation,
(iii) Focus Group Discussion (FGDs) and
(iv) Walk in Interview during Survey.

During the stakeholder consultation the people will be informed about:

1. PMSIP, Water Supply Improvement interventions, project background;
2. The project design and intervention with objectives and outcome;
3. The people were informed about the ESF of World Bank 2018, GoI land Acquisition Act of 2013, provisions of compensation as per GoP regulations and the compensation and

assistance therein and asked suggestion for improvement so that their suggestions can be incorporated by the implementation agency for the proposed PMSIP;

4. Likely positive and negative impacts of the project implementation
5. Proposed safety measures during construction;

Consultation and information disclosure will be held in the area of influence. In all occasions the date, time and venue of the consultation will be decided by the stakeholders keeping in view their prior engagement and availability. Group discussion with various groups in the project influence area will be conducted in the public places convenient to them while KIIs will be done by visiting the offices/place of the key informants.

8.4 Consultation and Participation

Consultation meetings will be held at/ near the WTP sites, areas along transmission lines & OHSRs. Possible project affected parties/ interested parties will be consulted through focus group discussions and officials from relevant authorities, local government will be consulted as key informants. During consultation with the people in groups or individually, they will be briefed about the project including potential benefits, potential positive and adverse impacts and mitigation measures as well. People will be asked to raise some issues related to the probable impacts on them considering other similar establishments in the country. They will also be asked to suggest/demand some mitigation measures for their livelihoods and sustainable development.

8.5 Outcome and Interpretation of Stakeholder Consultations (PIU)

From the consultation carried out in both cities, the people and stakeholders have outlined certain concerns and needs. The outcome of the consultations and outcomes/feedbacks/advises and concerns will be incorporated in ESIA and mitigation measures will be proposed in ESMP

Following is the summary of the city wise consultations held as part of the preparation of the ESMF.
Objective of the stakeholders Consultations

1. Iidentify different categories of stakeholders in the context of this project and the likely risks and impacts posed to them;
2. Understand the requirements for engagement for each category of stakeholder under the project, including their information and engagement needs
3. To obtain the views & opinions of the direct & indirect stakeholders for sustainable and effective water supply services
4. Exclusive consultations will be held during ESIA with vulnerable and disadvantaged groups/individuals and women to address their concerns and needs
5. To find out what will be the impact positive and negative if the implementation of project is done; before construction, during construction and after construction.
6. To find out environmental & social risks involved during the process
7. To find out the possible solutions from the stakeholders
8. stakeholders feedback will be obtained on how the GRM should be structured and their views will be considered to finalize the GRM structure.

Target Stakeholders

1. Locals whose livelihood is likely to be impacted

2. Day to day business, movement etc will be hampered along transmiison route
3. Fall in rate of land parcels due to development
4. Ward councillors, Mayor
5. NGOs/ - Youth Employment Federation
6. Resident welfare Associations
7. Local Community
8. Local street vendors. Kiosk owners
9. Shopkeepers
10. Senior Citizens

8.6 Summary of Previous Stakeholder Engagement Activities

As part of preparation 2 separate rounds of Stakeholder consultations were undertaken by PMIDC. The first was social screening and consultations was done internally by the Smart City staff of the Amritsar and Ludhiana municipalities between August- October 2019, wherein the staff held consultations with the local community, took a transect walk along the potentially impacted areas to understand land requirements, presence of squatters, encroachers, get people's views on the proposed project, understand their views on any adverse social and environmental impacts and elicit necessary community participation in the program.[4]

The second round of community consultations were done in January- February 2020 as part of the ESMF and ESMP preparation process by the consultant agency hired for preparation of the safeguards instruments. These consultations aimed to obtain the views of direct & indirect stakeholders for sustainable and effective water supply services, find out the likely project impacts (positive and negative) during different stages of the project (before construction, during construction and after construction) and the associated environmental & social risks, as perceived by these stakeholders, and understand from them the possible measures required to minimize or manage those risks

In Amritsar city consultations were held at 5 locations with 129 stakeholders, which included Ward councillors, Mayor, NGOs, Youth, Resident welfare Associations, Local Community, street vendors/ Shopkeepers and Senior Citizens. The following were the concerns and measures suggested by them:

In Ludhiana city consultations were held at 8 locations with 77 stakeholders which included ward councillors, NGOs, youth, resident welfare associations, local community, street vendors/ Shopkeepers and Senior Citizens. The following were the concerns raised and measures suggested by them and how

4 These consultations covered one potential WTP and 17 OHSR sites apart from 6 additional consultation covering 50 stakeholders in Amritsar City and 12 OHSR/ UGSR sites in Ludhiana City covering 124 stakeholders.

these are proposed to be addressed by incorporating them in project design and through additional mitigation measures:

Stakeholder Concerns	Measures Suggested by Stakeholders	Mitigation Measures / Inputs into Project Design
WTP Site		
Concerns about the price they will be offered for the land being negotiated	Offer of prices that are comparable to market rates in the area	As per policy and the instruments prepared, the negotiated rate cannot be less than the rate under LARR 2013 and has to be at full replacement cost
Conversion of dirt tract from highway to WTP site to all weather road	If converted it will help in improved access to the local community	Municipal Corporation to be advised to create tarred road along the canal
Disturbance due to movement of vehicles during construction period and operations of the proposed WTP	Proper planning to manage movement of vehicles, dust and noise pollution during WTP construction	Environmental safeguards measures to ensure traffic management and management of air, water and noise pollution as per national policy, ESS3 and ESS4
Local community is accessing ground water for drinking and other domestic purposes which is not safe	Drinking water be supplied to the village when the WTP is functional	Provisions to be made in scheme design to ensure coverage of local community under the WSS
Expectation regarding productive engagement with the project	Since a large number of workers will be deployed during	Livelihood restoration measures under the RAP to

during the construction and in Operations and Maintenance functions	construction and post construction phase, local residents should be preferred for these works.	include those directly as well as indirectly impacted like tenants, leaseholders and also those suffering third party impacts like owners of adjacent land
Residents near OHSR Sites and along the Transmission Lines		
Proper height of the OHSR needs to be maintained so that flow of water at good pressure is available to households	Ensure proper Height of the OHSR considering the locality	Project's design specifications for DBOT contract to ensure adequate supplies at good pressure
Availability & timing of water supply needs to ensure the requirements of the residents	Availability of 24x 7 water supply in the area will be good	Project designed to provide 24x7 water supplies to all those connected to piped water supply
Measures need to be in place to ensure environmental safety and no tampering of the OHSR	Safety measures should be in place along with some, security at the OHSR sites	Safety around OHSR sites to be part of the community health and safety measures and be part of the comtractor obligation under C-ESMP
Maintenance of greenery around the OHSR will be good	Plantation of trees around the OHSR will be a good step in this direction	The project plans to involve communities in adopting innovative measures for improving public spaces around OHSRs including improving greenery around it
Some parks identified for OHSR are the only parks in the locality which many people visit for walks and recreation	Suggestion on other locations, including government institutions available in the vicinity were made for OHSR	Finalisation of OHSR locations to be based on technical feasibility as well as least adverse impact/ inconvenience to local residents
Debris from the vehicles used in the construction phase will cause dust pollution	Vehicles used for carrying the construction materials should be covered to minimize dust	To be governed by regulations under national laws and ESS3. Supervision to ensure adherence to provisions of law and DBOT contract
Emergency and alternate back-up arrangements to OHSRs, like	Provisions need to be in place like extra motors for emergency	Municipal Corporation to be advised to retain connection

access to tubewell based water supply should not be disrupted	in case the main pumping mechanism at the OHSR fails and ensure link to existing source (tubewells) in case new service suffers breakdown	as a back-up and as part of emergency response
Existing pipelines are more than forty years old and in a poor condition, at some place the drinking water is getting contaminated with sewerage due to leakages	Instead of just augmentation and repair, totally new pipelines should be laid till the households for water supply	Replacement or augmentation of existing pipelines to be based on an assessment during the scheme design.

8.7 Grievance Redress Mechanism (GRM)

Efficient Grievance redress mechanism will be developed to assist the PAPs resolve their queries and complaints. Each RP will detail specific grievance redress mechanisms.
Grievances of PAPs will first be brought to the attention to the site office level of the PIU which shall be redressed within two weeks from the receipt of complaints. Grievances not redressed by the PIU staff (field level) will be brought to the Grievance Redress Committee (GRC) which shall be redressed within four weeks from the date of receiving the complaint at ESMU level. The GRC will have representatives from PAPs, ESMU, field level staff, district magistrate/commissioner, local administration, revenue authority and local community.

The main responsibilities of the GRC will be to: (i) provide support to PAPs on problems arising from land/property acquisition; (ii) record AP grievances, categorize, and prioritize grievances and resolve them; (iii) immediately inform the PMU of serious cases; and (iv) report to PAPs on developments regarding their grievances and decisions of the GRC and the PMU. Other than disputes relating to ownership rights under the court of law, GRC will review grievances involving all resettlement benefits, compensation, relocation, replacement cost and other assistance.

The GRC will meet every month (if grievances are brought to the Committee), determine the merit of each grievance, and resolve grievances within a month of receiving the complaint. Records will be kept of all grievances received including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the date these were affected, and final outcome. The GRCs will continue to function during the life of the Project including the defects liability period. For the PMSIP, the most likely complaints will be from the public as regards construction works, transmission line laying, burrowing, trenching, adjacent land parcel impacts, material transport, waste dumping, visual & environmental quality detoriation, social rights

Guiding Principles

The GRM for the PMSIP must be designed on the following universal principles:

1. **Accessibility and Social Inclusion:** The process has to be accessible to everybody that feels aggrieved and affected by the project regardless of age, gender, health condition or economic status in the communities. Vulnerable groups including women, aged, children and the

physically challenged should have the same equal opportunities and access to present their complaints without complications as with other people.

2. **Simplicity:** the filing & registering of complaints and grievances will be kept simple and the process of redress will be easily understandable by all stakeholders and the public.
3. **Transparency:** The system will encourage both positive and negative feedbacks. These feedbacks will be made available to all stakeholders to ensure they are adequately informed on issues that might hinder or enhance the sustenance of the project. The GRM will view and analyse all issues with transparent objectivity.
4. **Anonymity of grevient: all details of grevient will not be disclosed or made public, etc.**
5. **Inclusivity:** It is important that representatives of the community and stakeholders are involved in the GRM and everybody kept informed on any progress made in them.
6. **Due Process and Impartiality:** Every grievant will have the right to be present and be heard before a duly constituted body saddled with the responsibility of hearing and managing their grievances. The mechanism will be independent so that it will be perceived as fair by all.
7. **Quick Action:** Response to grievance and feedbacks will be prompt and direct to the grievant or the feedback provider. Grievances will be acknowledged at the point of uptake and the ensuing decisions will be communicated within 48 hours of reaching them.
8. **Qualification:** Personnel that would be involved in grievance redress should have basic communications skills as well as mediation, reconciliation and negotiation training. **Grievance Uptake Points:** There will be specified grievance uptake points where grievances/complaints will be lodged. The time frame for a response will be known to the grievant. Investigation and deliberations on the complaint will be publicly disclosed and communicated promptly.
9. **Analysis:** In grievance redress it is important for handlers to be clear on all the issues. The first step is an honest appraisal of whether the feedback is proactive or reactive. Facts have to be established against the interest and goal of grievant. Fact-finding is essential for meaningful and sustainable grievance/conflict redress. The handlers of grievance redress also need to appraise the complaints against relevance to the project and the project policies. Grievance handlers also need to know the category of grievance involved and treat accordingly. Grievances need to be characterized both for the sake of proper redress and for evaluation purpose.

Grievance Procedure

As the GRM works within existing legal and cultural frameworks, it is recognized that the GRM will comprise project level and Punjab judiciary level redress mechanisms. Most pproject related grievances could be minor and site-specific. Most grievances are to be received directly on-site by the designated site representative of PMIDC that will attempt to resolve them satisfactorily on-site. The designated site representative will inform the PIU of these complaints and their outcomes, and of others not satisfactorily resolved so that they could be escalated. All offline complaints will need to be logged in the site Complaints Register and periodically compiled at the city level for analysis and reporting purposes.

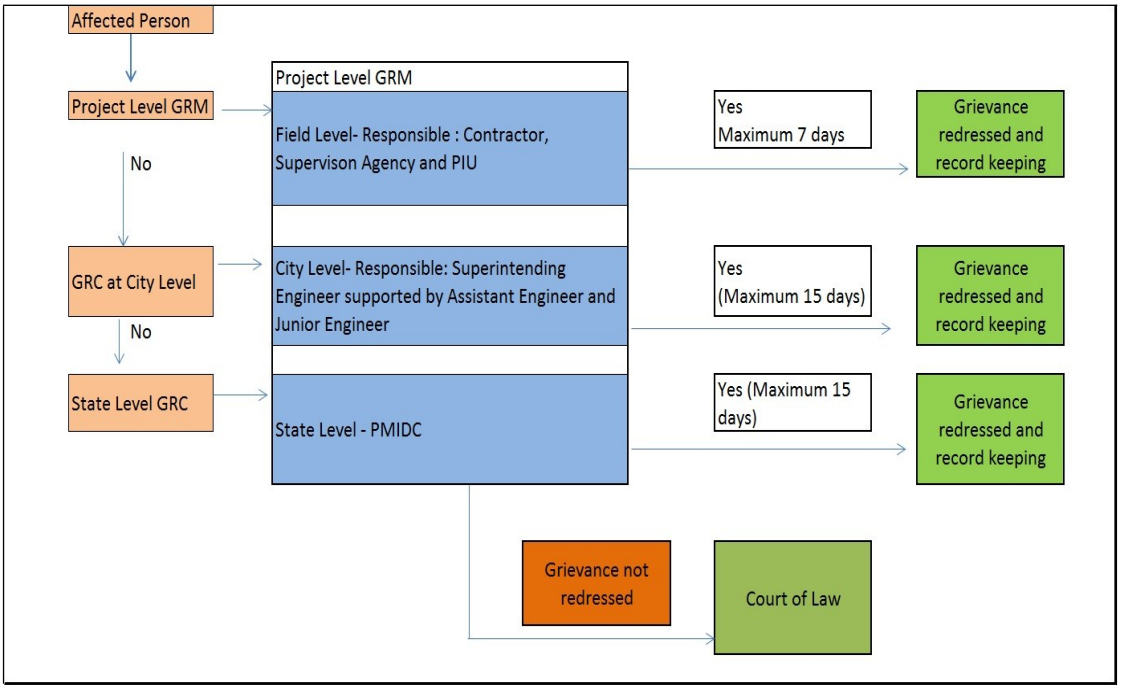
On receipt of each complaint, the representative will note the date, time, name and contact details of the complainant, and the nature of the complaint in the Complaints Register and will inform the complainant about the timeframe within which to expect a response/ redress. In case the representative is not able to redress the grievance within the project specified timeframe, it will be his/ her responsibility to escalate it to the PIU at the municipal corporation. Should the PIU be unable to

resolve the complaint to the satisfaction of the aggrieved persons, it will then refer the complaint directly to the PMU at PMIDC.

Steps:

1. **Registration:** This should be the first step and will involve the social contact person/institution receiving the complaint from the complainant. The complainant is expected to fill out and return a "complainant form" to the social Contact person/institution who in turn will acknowledge receipt of the complaint within 2 business working days.
2. **Verification:** The verification will determine among other things whether the matter has any relationship with the Project and whether the level at which it is presented can handle it. This will mean a quick referral of the case either to the next level or the traditional rulers or to law enforcement. Part of investigation will also be assessing the cost of loss or risk involved in the grievance.
3. **Processing:** The processing step is when options for the approach to resolving the case are weighed and determined. Parties involved in the case are brought together for a first attempt at resolution with suggestion from the parties by the social contact personnel. The social personnel at a certain level then decide where the case should go to for hearing and resolution if complainant decides to pursue the matter further. This should happen within five days from investigation.
4. **Implementation and case closing:** The social contact personnel then refer the case to the responding authority within the level for GRM implementation. This authority may be the chairman of the GRC or the officers with direct responsibility over the nature of the case within the PMU. Putting this in writing makes the appeal process faster in case of dissatisfaction on the part of the complainant. And in the case of satisfaction, it is an instrument to compel execution of decision. The outcome of the Grievance Redress process is therefore communicated to the complainant and other concerned party. The result of the process can vary. The request of the complainant may be turned down, compensation may be recommended, or Management may simply apologize to the grievant.

Figure 8.1: Grievance Redressal mechanism



In addition to this GRM, communities and individuals who believe that they are adversely affected by the WB supported project may submit complaints to the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond.

ANNEX

ANNEX 1: Sample Environmental and Social Screening Form

Project Name

Project Details in Brief:

Project location/s:

Project Details		
Sl.no	**Components**	**Details**
1	Project components	
2	Details of Alignment / Components (main components including construction activities)	
3	Location of the Project Sites & Current Land use (Provide information for all sites involved in the project), any historic land use (related to heritage, or contamination) Site Survey No:/s (with ownership), Geographical co-ordinates of the site	

Proposed Resource Use

Resource Use				
Sl.no	**Proposed Resources**	**Area/ Quantity**	**Unit**	**Details**
(i).	Land Area proposed to be used: Location wise (in sq km / sq m)			
(ii).	Estimated energy consumption for the project activities – Source wise			
(iii).	Estimated usage of water quantity for the project: Ground Water and Surface water?			

Baseline Environmental Conditions

Sl.no	**Environmental Aspects**	**Yes**	**No**	**Details**
1	Is the project site located on or adjacent to any of the following (Provide information for all sites and alignment of the project components/subcomponents, associated activities; mention distance to these features in meters/kilometres)			
i)	Critically Vulnerable Coastal Areas, Eco-sensitive Areas			
ii)	Cultural Heritage site, Protected monuments			
iii)	Natural Forests / Protected Areas Is the project in an eco- sensitive or adjoining an eco-sensitive area? If Yes, provide details.			
iv)	Any other Wetlands/ Mangrove/ Estuarine Region?			
v)	Any Natural Habitat areas, areas with			

Sl.no	Environmental Aspects	Yes	No	Details
	natural features?			
vi)	Any other Sensitive Environmental Components?			
vii)	Any Residences, schools, hospitals, sensitive receptors?			
viii)	Any culturally – socially important paths, areas/religious occupancies, burial grounds, tourist or pilgrim congregation areas, borders, etc?			
ix)	Any Drinking water source, upstream and downstream uses of rivers, etc?			
x)	Any Low-lying areas prone to flooding/areas of Tidal Influence?			
xi)	Details of Surface water quality at intake point			
xii)	Any areas affected by other disasters?			
2	Is the site in Critical / Over Exploited condition?			
3	Is the area disaster-prone? If yes; list all disaster zone categories applicable			
4	Describe the soil and vegetation on site	n/a	n/a	
5	Is the site area and condition suitable for proposed development?			
6	Describe existing pollution or degradation in the site(s)	n/a	n/a	
7	Any other remark on baseline condition?			

Anticipated Environmental Impacts: Impacts on Land, Geology and Soils

Sl.no	Impacts	Yes/ May create	No	Details
8.	Will the proposed project cause the following on Land / Soil?			
i)	Impact on Surrounding Environmental Conditions including Occupation on Low lying lands/flood plains			
ii)	Substantial removal of Top Soil (mention area in sqm)			
iii)	Any degradation of land / eco-systems expected due to the project?			
iv)	Loss or impacts on Cultural/heritage properties			
v)	Does the project activity involve cutting and filling/ blasting etc?			
vi)	Will the project cause physical changes in the project area (e.g., changes to the topography) due to earth filling,			

Sl.no	Impacts	Yes/ May create	No	Details
	excavation, earthwork or any other activity?			
vii)	Will the project involve any quarrying/ mining etc?			
viii	Will the project / any of its component contaminate or pollute the Land?			

Impacts on Water Environment

Sl.no	Impacts	Yes/ May Create	No	Details
9	Will the subproject or its components cause any of the following impact on Water sources (Quantity or Quality):			
i)	Will the activities have proposed at the site(s) impact water quality (surface or u n d e r ground) and water resource availability and use? Will this sub-project involve the dredging of water bodies, sea, canals, etc.			
ii)	Impacts on Water Resources			
iii)	Pollution of Water bodies/ground water nearby or downstream			
iv)	Will the project affect the River /cannel flow pattern, stream pattern or any other irrigation canal?			
v)	Will the project result in stagnation of water flow or pondage or weed growth			

Impacts on Biodiversity and Host Communities

Sl.no	Environmental Impacts	Yes/ May Create	No	Details
10	Will the subproject or its components cause any of the following impacts on Biodiversity or the neighborhood			
i)	Will the project necessitates cutting of? Trees / Loss of Vegetation			
ii)	Will the project result in Health & Safety Risks in the neighborhood including the release of toxic gases, accident risks			
iii)	Potential risk of habitat fragmentation due to the clearing activities? (e.g. Hindrance to the local biodiversity like disturbing the migratory path of animals/ birds etc.)			
iv)	Potential Noise and Light Pollution or disturbance to surrounding habitats/communities			

Sl.no	Environmental Impacts	Yes/ May Create	No	Details
v)	Potential disruption to common property, accessibility, traffic disruptions, conflicts or disruption to the local community within the subproject area?			

Impacts due to Storage and Wastes: Pollution and Hazards

	Type	Yes	No	Details
11	Will the subproject or its components cause any impact due to storage of materials, wastes or pollution due to releases during various project activities			
i)	Will the project use or store dangerous substances (e.g., large quantities of hazardous chemicals/ materials like Chlorine, Diesel, Petroleum products; any other?			
ii)	Will the project produce solid or liquid wastes; including construction/demolition wastes (including dredging, de-weeding wastes, muck/silt, dust); polluted liquids?			
iii)	Will the project cause or increase air pollution or odour nuisance?			
iv)	Will the project generate or increase noise levels which will impact surrounding biodiversity or communities?			
v)	Will the project generate or increase visual blight or light pollution?			
vi)	Will the project cause water pollution? (of waterbodies/ groundwater)?			
vii)	Will the project involve dangerous construction activities which may be a safety concern to workers/ host communities			
viii	Is there a potential for release of toxic gases or accident risks (e.g. potential fire outbreaks)			
12	Describe any other features of the project that could influence the ambient environment			

Suggested Environmental Enhancement Measures

	Enhancement Measures	Yes	No	Details
14	Has the subproject design considered the following enhancement measures?			
i)	Energy conservation measures/ energy recovery options incorporated in subproject design			

ii)	Considered waste minimization or waste reuse/recycle options			
iii)	Rainwater harvesting, water recycling and other water resource enhancement measures			
iv)	Considerations for extreme events, drought, flood, other natural disasters			
vi)	NOC for water withdrawal from surface water source			
vii)	Mining Permit (for dredging)			
viii)	NOC for transportation and storage of diesel, oil and lubricants, etc.			
ix)	Others (Mention)			

Land Use, Resettlement, and/or Land Acquisition				
Sl.no	**Components**	**Yes**	**No**	**Details**
1	Does the project involve acquisition of private land?			
2	Alienation of any type of Government land including that owned by Urban Local Body?			
3	Clearance of encroachment from Government/ Local body Land?			
4	Clearance of squatters/hawkers from Government/ Local Body Land?			
5	Number of structures, both authorized and/ or unauthorized to be acquired/ cleared/			
6	Number of households to be displaced?			
7	Village common properties to be alienated Pasture Land (acres) Acquisition / burial ground and others specify?			
8	Existing land uses on and around the project area (e.g., community facilities, agriculture, tourism, private property) will be affected?			
9	Will the project result in construction workers or other people moving into or having access to the area (for a long-time period and in large numbers compared to permanent residents)?			
10	Are financial compensation measures			

Land Use, Resettlement, and/or Land Acquisition				
Sl.no	**Components**	**Yes**	**No**	**Details**
	expected to be needed?			
Loss of Crops, Fruit Trees, Household Infrastructure and livelihood				
11	Will the project result in the permanent or temporary loss of the following?			
11.1	Crops?			
11.2	Fruit trees? Specify with numbers			
11.3	Petty Shops			
11.4	Vegetable/Fish/Meat vending			
11.5	Cycle repair shop			
11.6	Garage			
11.7	Tea stalls			
11.8	Grazing			
11.9	Loss of access to forest produce			
11.10	Any others - specify			
Welfare, Employment, and Gender				
12	Is the project likely to provide local employment opportunities, including employment opportunities for women?			
13	Is the project being planned with sufficient attention to local poverty alleviation objectives?			
14	Is the project being designed with sufficient local participation (including the participation of women) in the planning, design, and implementation process?			
Historical, Archaeological, or Cultural Heritage Sites				
15	Historical heritage site(s) require excavation near the same?			
16	Archaeological heritage site(s) require excavation near the same?			
17	Cultural heritage site(s) require excavation near the same?			
18	Graves or sacred locations require excavations near the same?			
Tribal Population/Indigenous People				

Land Use, Resettlement, and/or Land Acquisition				
Sl.no	**Components**	**Yes**	**No**	**Details**
19	Does this project involve acquisition of any land belonging to Tribal people?			
Beneficiaries				
20	Population proposed to be benefitted by the proposed project	Approx. no.:		
21	No. of Females proposed to be benefitted by the proposed project	Approx. no.:		
22	Vulnerable households /population to be benefitted	Approx. no.:		
23	No. of Families to be benefitted	Approx. no.:		

Project Categorization and Need for Environmental and Social Instruments, Oversight

Project Category	**□ Low □ Moderate □ Substantial □ High**
Key Reasons	
Environmental and Social Instruments Required	**□ *Detailed* ESIA and ESMP** **□ *ESA*** **□ *RAP*** **□ *Site-specific* ESMP**

Status	***Agency / Official***	***Name, Signature with Date and Seal***
Prepared by	Environmental Specialist	
	Environmental Expert in charge	

Checked and Categorized as (low, moderate, substantial, high) by	PMU	
	Environmental Specialist	

Reviewed & accepted by	PMU	
	Environmental Specialist	

This Screening sheet must be completed for each of the proposed subproject and forwarded to the Environment and Social Specialist and in Respective PMU along with the following enclosures.

Enclosures:

1. Provide maps with the geographical location of the project;
2. an appropriately scaled map clearly showing the project area and project sites with land use, existing buildings, infrastructure, vegetation, adjacent land use, utility lines, access roads and any planned construction, and
3. any other information to describe the project, locations and possible impact as required.
4. Land details for the project sites, location, survey numbers,
5. extent available and required, land use classification, current use of the site,
6. land ownership, alienation/acquisition status, as required along with a certificate giving availability of sites required for the project by the borrower

Project Categorization and Need for Standards Instruments, Oversight

Project Category	**□ Low □ Moderate □ Substantial □ High**
Key Reasons	
Environmental and Social Instruments Required	**□ *Detailed* ESIA and ESMP** **□ *ESA*** **□ *RAP*** **□ *Site-specific* ESMP**

Status	***Agency / Official***	***Name, Signature with Date and Seal***
Prepared by	Social Specialist	
	Social Expert / in – charge	
Checked and Categorized as (low, moderate, substantial, high) by	PMU	
	Social Specialist	

Reviewed & accepted by	NPMU	
	Social Specialist	

ANNEX 2: Generic ESIA Terms of Reference

Introduction and context

This part will be completed in time and will include necessary information related to the context and methodology to carry out the study.

Objectives of study

This section will indicate (i) the objectives and the project activities; (ii) the activities that may cause environmental and social negative impacts and needing adequate mitigation measures

Tasks

To take the following into account:

1. Assess the potential environmental and social impacts related to project activities and recommend adequate mitigation measures, including costs estimation.
2. Review institutional assessment and framework for environmental management.
3. Identify responsibilities and actors for the implementation of proposed mitigation measures
4. Assess the capacity available to implement the proposed mitigation measures and suggest recommendation in terms of training and capacity building and estimate their costs.
5. Develop an Environmental and Social Management Plan (ESMP) for the project. The ESMP should underline
    - the potential environmental and social impacts resulting from project activities
    - the proposed mitigation measures;
    - the institutional responsibilities for implementation;
    - the monitoring indicators;
    - the institutional responsibilities for monitoring and implementation of mitigation measures;
    - The costs of activities; and
    - the calendar of implementation.
6. Public consultations. The ESMP results and the proposed mitigation measures will be discussed with relevant stakeholders, NGOs, local administration and other organizations mainly involved by the project activities. Recommendations from this public consultation will be include in the final ESMP report.

Outline of the ESIA & ESMP report

The report should include the following items (not necessarily in the order shown):

1. Cover page
2. Table of contents
3. List of acronyms
4. Executive summary. Concisely discusses significant findings and recommended actions.

5. Policy, legal, and administrative framework. Discusses the policy, legal, and administrative framework within which the ESIA is carried out. Identifies relevant international environmental agreements to which the country is a party.
6. Project description. Concisely describes the proposed project and its geographic, ecological, social, and temporal context. Normally includes a map showing the project site and the project's area of influence. Each ESIA study for the WTPs should specify requirements to test intake water quality, with recommendations for specifications of the WTP to align with the outcomes

7. Baseline data. Assesses the dimensions of the study area and describes relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences. Also takes into account current and proposed development activities within the project area but not directly connected to the project. Data should be relevant to decisions about project location, design, operation, or mitigation measures. The section indicates the accuracy, reliability, and sources of the data.
8. Environmental & Social impacts. Predicts and assesses the project's likely positive and negative impacts, in quantitative terms to the extent possible. Identifies mitigation measures and any residual negative impacts that cannot be mitigated. Explores opportunities for environmental & social enhancement. Identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions, and specifies topics that do not require further attention.
9. Analysis of alternatives. Systematically compares feasible alternatives to the proposed project site, technology, design, and operation--including the "without project" situation--in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements. For each of the alternatives, quantifies the environmental impacts to the extent possible. States the basis for selecting the particular project site and justifies recommended emission levels and approaches to pollution prevention and abatement.
10. Environmental & Social management plan (ESMP). Covers mitigation measures, monitoring, and institutional strengthening. A project's (ESMP) consists of the set of mitigation, monitoring, and institutional measures to be taken during implementation and operation to eliminate adverse environmental and social impact, offset them, or reduce them to acceptable levels. The plan also includes the actions needed to implement these measures. To prepare a management plan, the borrower and its ESIA team (a) identify the set of responses to potentially adverse impact; (b) determine requirements for ensuring that those responses are made effectively and in a timely manner; and (c) describe the means for meeting those requirements. More specifically, the EMP includes the following components.
    - Mitigation
        - The EMP identifies feasible cost-effective measures that may reduce potentially significant adverse environmental impact to acceptable levels. The plan includes compensatory measures if mitigation measures are not feasible, cost-effective, or sufficient. Specifically, the ESMP:
        - identifies and summarizes all anticipated significant adverse environmental impacts (including those involving land acquisition, involuntary resettlement, labour management, etc);
        - Provides linkage with any other mitigation plans (e.g., for involuntary resettlement, indigenous peoples, cultural property or other social impacts such

as potential issues of violence against women and children resulting from influx of workers in communities in the subproject area etc.) required for the project.

- Monitoring

  Environmental monitoring during project implementation provides information about key environmental aspects of the project, particularly its environmental impact, and the effectiveness of mitigation measures. Such information enables the borrower and the Bank to evaluate the success of mitigation as part of project supervision, and allows corrective action to be taken when needed. Therefore, the ESMP identifies monitoring objectives and specifies the type of monitoring, with linkages to the impact assessed in the ESIA report and the mitigation measures described in the ESMP. Specifically, the monitoring section of the EMP provides (a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds/indicator that will signal the need for corrective actions; and

  (b) monitoring and reporting procedures to

  (i) ensure early detection of conditions that necessitate particular mitigation measures, and

  (ii) furnish information on the progress and results of mitigation.

- Capacity Development and Training

  To support timely and effective implementation of environmental project components and mitigation measures, the ESMP draws on the ESIA's assessment of the existence, role, and capability of environmental units on site or at the regency, provincial or central level. If necessary, the ESMP recommends the establishment or expansion of such units, and the training of staff, to allow implementation of ESIA recommendations. Specifically, the ESMP provides a specific description of institutional arrangements - who is responsible for carrying out the mitigation and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). To strengthen environmental management capability in the agencies responsible for implementation, most ESMPs cover one or more of the following additional topics: (a) technical assistance programs, (b) procurement of equipment and supplies, and (c) organizational changes.

- Implementation Schedule and Cost Estimates

  For all three aspects (mitigation, monitoring, and capacity development), the ESMP provides (a) an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and (b) the capital and recurrent cost estimates and sources of funds for implementing the ESMP. These figures are also integrated into the total project cost tables.

11. Stakeholder Engagement
12. ESCP
13. Conclusion and Recommendations
14. Annexes:
    I. List of persons / institutions meet
    II. Technical drawings, plans & maps

III. Resettlement Action Plan
IV. Stakeholders Engagement Plan and Grievance Redressal
V. Consultations details -MoM, signatures, photographs
VI. Labour Management Procedure
VII. Detailed Primary baseline data for Physicochemical, Social & Biodiversity
VIII. Traffic management plan

ANNEX 3: Generic Waste Management Plan (WMP)

This waste management plan is to address waste that could be generated during the civil works and other activities likely to be generated during the implementation, operation and maintenance phase of this PMSIP. It entails appropriate, cost effective and environment-friendly options for reduction, collection, handling, treatment and safe disposal of the waste streams in line with best practices.

Objective of Waste Management Plan

The objectives of this WMP are:

1. To assess the current waste management situation;
2. To assess local handling, treatment and disposal options;
3. Capacity- building Requirements for Staff;
4. Waste Categorization Stream (types of waste);
5. Waste Collection and Treatment; and
6. Implementation Timetable

The Table below shows the summary of a generic Waste Plan

PROJECT PHASE	DESCRIPTION	WASTE TREATMENT	RESPONSIBILITY	COST ($)
CONSTRUCTION (WTP & OHSR)	Waste generated here will typically be cement blocks, bricks, nails, wood residues and chippings and, metals, glass, electrical & plumbing fixtures, debris, gravel, sand, cardboard	1. Ensure proper handling, and disposal of wastes Rehabilitation/Construction waste should be disposed weekly 2. Waste must be stored temporarily in designated areas daily 3. Waste should be evacuated weekly 4. On site waste collection and storage points should be located in areas that can easily be accessed by waste collection trucks without hindrance to traffic on the main road.	Contractor	
OPERATION AND MAINTENANCE	Waste generated in this phase will typically be Solid, hazardous effluent water from WTP plant.	4. A management should be put in place and should be prepared in accordance with the 1. National Solid & Hazardous Management regulation & Guideline 2. State Government/Pollution Control Board Regulation 3. Local Govt/MC level regulation	O&M Contractor/ MC	
			TOTAL	

ANNEX 4: Applicable Environment Standards of GoI

The Central Pollution Control Board (CPCB) has stipulated different environmental standards with regards to. Ambient Air Quality, Noise Quality, Water and Wastewater for the country as a whole under EP Act, 1986. WB EHS guidelines shall also be applicable for best international practices. Some of these standards shall be only be applicable either construction phase or operation phase of the proposed plant. The applicable environmental standards for the proposed project have been discussed in the subsequent sections. The ambient air quality standards will be applicable only during the construction phase of the project and the wastewater discharges from the project during both construction and operation phases shall be as per the general discharge standards as sector specific standards are not available for water supply projects.

Ambient Air Quality Standards

Standards for Ambient Air Quality will only be applicable during construction phase only as no air major polluting process is expected during operation phase of the project. National Ambient Air Quality Standards (NAAQS), as notified under Environment (Protection) Rules 1986 and revised through Environment (Protection) Seventh Amendment Rules, 2009 are given in Table below.

National Ambient Air Quality Standards

Pollutant	Time Weighted Average	Concentration in Ambient Air	
		Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (notified by Central Government)
Sulphur Dioxide (SO_2), $\mu g/m^3$	Annual* 24 hours**	50 80	20 80
Nitrogen Dioxide (NO_2), $\mu g/m^3$	Annual* 24 hours**	40 80	30 80
Particulate Matter (size less than 10 µm) or PM_{10} $\mu g/m^3$	Annual* 24 hours**	60 100	60 100
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$ $\mu g/m^3$	Annual* 24 hours**	40 60	40 60
Ozone (O_3) $\mu g/m^3$	8 hours* 1 hour**	100 180	100 180
Lead (Pb) $\mu g/m^3$	Annual* 24 hours**	0.50 1.0	0.50 1.0
Carbon Monoxide (CO) mg/m^3	8 hours* 1 hour**	02 04	02 04
Ammonia (NH_3) $\mu g/m^3$	Annual* 24 hours**	100 400	100 400
Benzene (C_6H_6) $\mu g/m^3$	Annual*	5	5
Benzo(a)Pyrene (BaP)- particulate	Annual*	1	1

Pollutant	Time Weighted Average	Concentration in Ambient Air	
		Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (notified by Central Government)
phase only, ng/m^3			
Arsenic(As), ng/m^3	Annual*	6	60
Nickel (Ni), ng/m^3	Annual*	20	20
* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals. ** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time, they may exceed the limits but not on two consecutive days of monitoring. Source: National Ambient Air Quality Standards, Central Pollution Control Board Notification in the Gazette of India, Extraordinary, New Delhi, 18th November, 2009			

Water Quality Standards

The designated best use classification as prescribed by CPCB for surface water is as given in Table below.

Primary Water Quality Criteria for Designated-Best-Use-Classes

Designated Best Use	Class	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	1.Total Coliforms Organism MPN/100ml shall be 50 or less 2. pH between 6.5 and 8.5 3. Dissolved Oxygen 6mg/l or more 4. Biochemical Oxygen Demand 5 days 20 °C, 2mg/l or less
Outdoor bathing (Organised)	B	1.Total Coliforms Organism MPN/100ml shall be 500 or less 2. pH between 6.5 and 8.5 3. Dissolved Oxygen 5mg/l or more 4. Biochemical Oxygen Demand 5 days 20 °C, 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	1. Total Coliforms Organism MPN/100ml shall be 5000 or less 2. pH between 6 and 9 3. Dissolved Oxygen 4mg/l or more 4. Biochemical Oxygen Demand 5 days 20 °C, 3mg/l or less
Propagation of Wild life and Fisheries	D	1. pH between 6.5 and 8.5 2. Dissolved Oxygen 4mg/l or more 3. Free Ammonia (as N) 4. Biochemical Oxygen Demand 5 days 20 °C, 2mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	1. pH between 6.0 and 8.5 2. Electrical Conductivity at 25 °C micro mhos/cm, maximum 2250 3. Sodium absorption Ratio Max. 26 4. Boron Max. 2mg/l
	Below-E	Not meeting any of the A, B, C, D & E criteria

Drinking Water Standard (IS 10500: 2012)

Characteristics	Desirable limit	Permissible limit
Essential Characteristics		
Colour, Hazen Units, Max	5	25
Odour	Unobjectionable	-
Taste	Agreeable	-
Turbidity, NTU, Max	5	10
PH value	6.5 to 8.5	-

Characteristics	Desirable limit	Permissible limit
Total Hardness (as $CaCo_3$), mg/l, Max	300	600
Iron (as Fe), mg/l, Max	0.3	1.0
Chlorides (as Cl), mg/l, Max	250	1,000
Residual free chlorine, mg/l, Max	0.2	-
Desirable Characteristics		
Dissolved solids, mg/l, Max	500	2,000
Calcium as (Ca), mg/l, Max	75	200
Magnesium (as Mg), mg/l, Max	30	75
Copper (as Cu), mg/l, Max	0.05	1.5
Manganese (as Mn), mg/l, Max	0.1	0.3
Sulphate (as So_4), mg/l, Max	200	400
Nitrate (as No_3), mg/l, Max	45	100
Flouride (as F0, mg/l, Max	1.0	1.5
Phenolic compounds (as C_6H_5OH), mg/l, Max	0.001	0.002
Mercury (as Hg), mg/l, Max	0.001	-
Cadmium (as Cd), mg/l, Max	0.01	-
Selenium (as Se), mg/l, Max	0.01	-
Arsenic (as As), mg/l, Max	0.05	-
Cyanide (as CN), mg/l, Max	0.05	
Lead (as Pb), mg/l, Max	0.05	-
Anionic detergents (as MBAS), mg/l, Max	0.02	1.0
Chromium (as Cr^{6+}), mg/l, Max	0.05	-
PAH, mg/l, Max	-	-
Mineral oil, mg/l, Max	0.01	0.03
Pesticides, mg/l, MAX	Absent	0.001
Alkalinity, mg/l, Max	200	600
Aluminum (as Al), mg/l, Max	0.03	0.2
Boron, mg/l, Max	1	5

Irrigation water quality: Guidelines are available to evaluate quality of water for irrigation. For irrigation, water can be classified in five classes depending upon its chemical properties.

Guidelines for Evaluation of Irrigation Water Quality

Water class	Sodium (Na) %	Electrical conductivity (mS/cm)	SAR	RSCmeq/l
Excellent	< 20	< 250	< 10	< 1.25
Good	20 - 40	250 – 750	10 – 18	1.25 – 2.0
Medium	40 - 60	750 – 2,250	18 – 26	2.0 – 2.5
Bad	60 – 80	2,250 – 4,000	> 26	2.5 – 3.0

Very bad	> 80	> 4,000	> 26	> 3.0

Ambient Noise Standards

Noise standards notified by the MoEF&CC vide gazette notification dated 14 February 2000 based is given in table below

Ambient Air Quality standards in respect of Noise

Area Code	Category of Area/Zone	Limits in dB(A) Leq*	
		Day Time	Night Time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

Note: -

1. Day time shall mean from 6.00 a.m. to 10.00 p.m.
2. Night-time shall mean from 10.00 p.m. to 6.00 a.m.
3. Silence zone is defined as an area comprising not less than 100 meters around hospitals, educational institutions and courts. The silence zones are zones, which are declared as such by the competent authority.
4. Mixed categories of areas may be declared as one of the four-abovementioned categories by the competent authority.

    1. *dB (A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.
    2. A “decibel” is a unit in which noise is measured.
    3. “A” in dB (A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

ANNEX 5: Labour Management Procedure

The PMSIP project will cause an influx of local and external labour at the project sites. There would be worker camps established in the project sites. The impacts from these would increase opportunities for employment for the local people which is a positive move but on the negative side the requirement of resources, accumulation of waste both liquid and solid, potential spread of diseases and infections in the area, etc. needs to be managed. Waste disposal should be properly organized so that there would not be any littering and pollution of nearby river. All the construction sites, stores of materials, parking areas, temporary and permanent building, cleanliness of camps, ventilation, etc. should be carefully maintained. All the disposals should be properly supervised.

Overview of labor use on the project

This section describes the following, based on available information:

Number of Project Workers: The total number of workers to be employed on the project, and the different types of workers: direct workers, contracted workers and community workers. Where numbers are not yet firm, an estimate should be provided.

Characteristics of Project Workers: To the extent possible, a broad description and an indication of the likely characteristics of the project workers e.g. local workers, national or international migrants, female workers, workers between the minimum age and 18.

Timing of Labor Requirements: The timing and sequencing of labor requirements in terms of numbers, locations, types of jobs and skills required.

Contracted Workers: The anticipated or known contracting structure for the project, with numbers and types of contractors/subcontractors and the likely number of project workers to be employed or engaged by each contractor/subcontractor. If it is likely that project workers will be engaged through brokers, intermediaries or agents, this should be noted together with an estimate how many workers are expected to be recruited in this way.

Migrant Workers: If it is likely that migrant workers (either domestic or international) are expected to work on the project, this should be noted, and details provided.

Assessment of key potential labor risks

This section describes the following, based on available information:

Project activities: The type and location of the project, and the different activities the project workers will carry out.

Key Labor Risks: The key labor risks which may be associated with the project (see, for example, those identified in ESS2 and the GN). These could include, for example:

1. The conduct of hazardous work, such as working at heights or in confined spaces, use of heavy machinery, or use of hazardous materials
2. Likely incidents of child labor or forced labor, with reference to the sector or locality
3. Likely presence of migrants or seasonal workers
4. Risks of labor influx or gender-based violence
5. Possible accidents or emergencies, with reference to the sector or locality

Brief overview of labor legislation: terms and conditions

This section sets out the key aspects of national labor legislation with regards to term and conditions of work, and how national legislation applies to different categories of workers identified. The overview focuses on legislation which relates to the items set out in ESS2, paragraph 11 (i.e. wages, deductions and benefits).

Brief overview of labor legislation: occupational health and safety
This section sets out the key aspects of the national labor legislation with regards to occupational health and safety, and how national legislation applies to the different categories of workers identified. The overview focuses on legislation which relates to the items set out in ESS2, paragraphs 24 to 30.

Responsible staff
This section identifies the functions and/or individuals within the project responsible for (as relevant):

1. engagement and management of project workers
2. engagement and management of contractors/subcontractors
3. occupational health and safety (OHS)
4. training of workers
5. addressing worker grievances

In some cases, this section will identify functions and/or individuals from contractors or subcontractors, particularly in projects where project workers are employed by third parties.

Policies and procedures
This section sets out information on OHS, reporting and monitoring and other general project policies. Where relevant, it identifies applicable national legislation.
Where significant safety risks have been identified, this section outlines how these will be addressed. Where the risk of forced labor has been identified, this section outlines how these will be addressed (see ESS2, paragraph 20 and related GNs). Where risks of child labor have been identified, these are addressed. Where the Borrower has stand-alone policies or procedures, these can be referenced or annexed to the LMP, together with any other supporting documentation.

Age of employment
This section sets out details regarding:

1. The minimum age for employment on the project
2. The process that will be followed to verify the age of project workers
3. The procedure that will be followed if underage workers are found working on the project
4. The procedure for conducting risk assessments for workers aged between the minimum age and 18

Terms and conditions
This section sets out details regarding:

1. Specific wages, hours and other provisions that apply to the project
2. Maximum number of hours that can be worked on the project
3. Any collective agreements that apply to the project. When relevant, provide a list of agreements and describe key features and provisions
4. Other specific terms and conditions

Grievance mechanism
This section sets out details of the grievance mechanism that will be provided for direct and contracted workers and describes the way in which these workers will be made aware of the mechanism. Where community workers are engaged in the project, details of the grievance mechanism for these workers is set out .

Contractor management

This section sets out details regarding:

1. The selection process for contractors, as discussed in ESS2, paragraph 31 and GN 31.1.
2. The contractual provisions that will put in place relating to contractors for the management of labor issues, including occupational health and safety, as discussed in ESS2, paragraph 32 and GN 32.1
3. The procedure for managing and monitoring the performance of contractors, as discussed in ESS2, paragraph 32 and GN 32.1

Community workers

Where community workers will be involved in the project, this section sets out details of the terms and conditions of work and identifies measures to check that community labor is provided on a voluntary basis. It also provides details of the type of agreements that are required and how they will be documented. See GN 34.4.

This section sets out details of the grievance mechanism for community workers and the roles and responsibilities for monitoring such workers. See ESS2, paragraphs 36 and 37.

Primary supply workers

Where a significant risk of child or forced labor or serious safety issues in relation to primary suppliers has been identified, this section sets out the procedure for monitoring and reporting on primary supply workers.

ANNEX 6: Training Module

S. No.	Training Recipients	Mode of Training	Environmental and Social Aspects to be covered in training modules	Training Conducting Agency
(Before Start of Construction Work by ESMU)				
One day				
1	Staff of ESMU and CMU	Lecture Session, presentation & discussion	World Bank's Environment and Social Management Framework	Environment Specialist, ESMU
2	Staff of ESMU and CMU	Lecture Session, presentation & discussion	Legal requirements of the project, ESCP, etc.	Environment Specialist, ESMU
3	Staff of ESMU and CMU	Lecture Session, presentation & discussion	Specific Environment and Social Management Plan and ESCP	Environment Specialist, ESMU
(Before Start of Construction Work)				
Day-1 (Session-I)				
1	Staff of ESMU, staff of PMC, Engineering Staff of Contractor and Collaborating Government Agencies	Lecture Sessions, Presentation and discussion	Overall generic Environment Issues, Regulations & Statuary requirements and Mitigation Measures, ESCP	PMC
2	Staff of ESMU, staff of PMC, Engineering Staff of Contractor and Collaborating Government Agencies.	Lecture Sessions, Workshops & Presentation	Institutional Set Up, Role and Responsibility of Stake Holders and Contractual obligations	PMC
Day-1 (Session-II)				
4	Staff of ESMU, staff of PMC, Engineering Staff of Contractor and Collaborating Government Agencies.	Lecture Sessions, Workshops & Presentation	Biodiversity Management; Concept, scopes and measures in the project	PMC
Day-2 (Session-I)				
1	Staff of ESMU, staff of PMC, Engineering Staff of Contractor and other Concerned Agencies.	Lectures; Demonstration sessions	Project related Project related environmental issues and mitigation measures	PMC
2	Staff of ESMU (Nodal Level), staff of PMC, Engineering Staff of Contractor.	Group Discussions and action plan for the project	Environmentally Sound Construction Management & Environmentally, Sustainable operations of Water Supply Development	PMC
Day-2 (Session-II)				
3	Staff of ESMU staff of PMC, Engineering Staff of contractor.	Lectures; Group Discussions	Supervision and Monitoring, Reporting Formats	PMC
4	Staff of ESMU, staff of PMC, Engineering Staff of Contractor and	Lecture Sessions, Workshops & Presentation	Occupational Health and Safety Community Health and Safety	PMC

S. No.	Training Recipients	Mode of Training	Environmental and Social Aspects to be covered in training modules	Training Conducting Agency
(Before Start of Construction Work by ESMU)				
One day				
	Collaborating Government Agencies.			
Module for Training During Construction (Immediately after Commencement of Construction activities)				
Day-1				
1	Staff of ESMU involved in the project, staff of PMC, involved in construction, contractor	Lecture Sessions, Presentation & Workshops	Implementation of Environment Management Plan, Environment friendly Construction Methodology and Workers Safety during Construction	PMC
2	Staff of ESMU involved in the project, staff of PMC, involved in construction, contractor	Lecture Sessions, Workshops & Presentation	Interactive discussion, Monitoring and Reporting System	PMC
Day-2				
5	Staff of ESMU staff of PMC, Engineering Staff of contractor.	Lectures;	Occupational and Community Health and Safety; Introduction, Scope and management measures	PMC
6	Staff of ESMU staff of PMC, Engineering Staff of contractor.	Lectures;	Stake holder's engagement procedures, Grievance redressal mechanism	PMC
Module for Training during Construction				
One day				
1	ESMU, Staff of PMC, All Staff of contractor	Lecture Sessions, Workshops & Presentation	Environment friendly Construction Methodology and Workers Safety	PMC
2	ESMU, Staff of PMC, All Staff of contractor.	Practical on Site	Traffic and Safety Management during construction; Safety Practices	PMC
Module for Training before Contractor Demobilization				
One day				
1	ESMU Staff, Staff of PMC, Engineering Staff of Contractor.	Lecture, Presentation Sessions	Restoration of Site	PMC
2	ESMU Staff, Staff of PMC, Engineering Staff of Contractor.	Lecture Sessions, Presentation, Workshop and lesson learned	Reporting Formats for Restoration	PMC
After Construction before Start of Monitoring				
One day				
1	ESMU	Lecture Sessions, Presentation and Workshop	Environment Monitoring	PMC
2	ESMU	Lecture Sessions, Presentation, Workshop	Reporting Formats	PMC

ANNEX 7: Sample GRM Form

Grievance Form: Punjab Urban Governance and water Supply Improvement Programme			
Grievance reference number (to be completed by Project):			
Contact details (may be submitted anonymously)	Name (s):		
	Address:		
	Telephone:		
	Email:		
How would you prefer to be contacted (check one)	By mail/post: ☐	By phone: ☐	By email ☐
Preferred language	☐ Hindi/Punjabi	☐ English	
Provide details of your grievance. Please describe the problem, who it happened to, when and where it happened, how many times, etc. Describe in as much detail as possible.			
What is your suggested resolution for the grievance, if you have one? Is there something you would like PMIDC, MC, PIU or another party/person to do to solve the problem?			
How have you submitted this form to the project?	Website ☐	Email ☐	By hand ☐
	In person ☐	By telephone ☐	Other (specify) ☐
Who filled out this form (If not the person named above)?	Name and contact details:		
Signature			
Name of PIU official assigned responsibility			
Resolved or referred to GRC1?	☐ Resolved	☐ Referred	If referred, date:
Resolved referred to GRC2?	☐ Resolved	☐ Referred	If referred, date:
Completion			
Final resolution (briefly describe)			
	Short description	Accepted ? (Y/N)	Acknowledgement signature
1st proposed solution			
2nd proposed solution			
3rd proposed solution			

Grievance Recording And Management

The format for documenting community grievances and an example case is shown below:

No.	Name of Complainant and Communication Tool Used	Date and Time of Report	Content and Scope of Grievance	Follow-up and Communication with Complainant	Party conducting Follow-up	Date of Follow-up	Grievance Status (resolved or not)
1.	*Mr/Ms…… through SMS number 0……*	*10th February 2020 at 11.23 AM*	*Piping laying excavation caused the roads to be wet and slippery. Scope: urban road safety*	*Clean leftover soil from the roadside with proper equipment*	*Pipe laying/ trenching excavation contractor through MC*	*12th February 2020*	*Resolved and informed to the reporter*
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

ANNEX 8: Consultation Details, Stakeholders Attendance Sheets, MoM & Photographs

Outcomes of Consultation and Integration into Project Design

Sl. No.	Date and Location	Questions Discussed	People's suggestion
1	**Venue-Manna Singh Nagar Date 15-02-2020, Time 2:00 PM**	1.Opinion overhead tank being constructed in their locality 2. Consent about the civil construction being under taken in the vicinity 3.Impact on their day to day work routine from digging and construction 4.Any reservations about construction activity in their neighbourhood 5.Problems foreseen due to such construction activities 6. Scale of activities including civil work, influx of labour and their activities at the project sites. 7.Their expectations from the project	1. Concerns: Interrupted water supply Suggested measures: repair old OHSR before initiation of construction of new Storage tanks, 2. Concerns: Safety of OHSR is an issue Suggested measures: Boundary wall surrounding the OHSR should be made, 3. Concerns: environmental and safety measures Suggested measures: Safety Measures need to be adopted 4. Concerns: Need for greenery near OHSRs Suggested measures:: Plantation of trees around the OHSRs
2	**Nehru Rose Garden Date:18/02/2020 Time 3:00PM Number of Participants -8**	1.Opinion overhead tank being constructed in their locality 2. Consent about the civil construction being under taken in the vicinity 3.Impact on their day to day work routine from digging and construction 4.Any reservations about construction activity in their neighbourhood 5.Problems foreseen due to such construction activities 6. Scale of activities including civil work, influx of labour and their activities at the project sites.	5. Concerns: Water supply timing needs to be ensured Suggested measures: 24x7 supply would be required. 6. Concerns: Safety of OHSR is required Suggested measures: boundary walls need to be erected around OHSR for safety of the water reservoir. 7. Concerns: Awareness about the OHSR Suggested measures: Slogans regarding water conservation and save water on the boundary walls should be written 8. Concerns: Green cover around the OHSR Suggested measures: should be covered with trees. 9. Concerns: Water supply pressure need to be adequate Suggested measures: To maintain the water supply pressure, height of the water tank should

Sl. No.	Date and Location	Questions Discussed	People's suggestion
		7.Their expectations from the project	be appropriate
3	**Gyaspura ward 31, Date 20-02-2020, Time: 12:00 PM Number of Participants: 14**	1.Opinion overhead tank being constructed in their locality 2. Consent about the civil construction being under taken in the vicinity 3.Impact on their day to day work routine from digging and construction 4.Any reservations about construction activity in their neighbourhood 5.Problems foreseen due to such construction activities 6. Scale of activities including civil work, influx of labour and their activities at the project sites. 7.Their expectations from the project	10. Concerns: Location could be reassessed Suggested measures: Alternate location to be checked and evaluated before undertaking construction. 11. Concerns: Daily work routine gets hampered during process of construction. Suggested measures: Maximum care needs to be taken to minimize disruption 12. Concerns: Greenery will be lost Suggested measures : Plantation needs to be done around the OHSR 13. Concerns: Security measures need to be in place Suggested measures: security measures will be taken care of. 14. Concerns: Alternate Water supply needs to be ensured Suggested measures: existing tube-well supply should not be disrupted (remain as back up). 15. Concerns: Drinking water quality needs to be good Suggested measures: availability of good quality water 16. Concerns: Debris during transportation of construction material can be a problem Suggested measures: Vehicles used for carrying construction materials should be covered. 17. Concerns: water availability in emergency Suggested measures: provision of extra/ alternate pumping arrangements/ motors for emergency.
4	**M Block Park Date 19/02/2020, Time: 11:00 AM Number of Participants-6**	1.Opinion overhead tank being constructed in their locality 2. Consent about the civil construction being under taken in the vicinity 3.Impact on their day to day work routine from digging and construction 4.Any reservations about construction activity in their	18. Concerns: area is densely populated, not appropriate for construction of OHSR. Suggested measures: Participants raised objection against the construction. 19. Concerns: poor condition of existing water tanks Suggested measures: Old one should be demolished and alternate location for new OHSR

Sl. No.	Date and Location	Questions Discussed	People's suggestion
		neighbourhood 5.Problems foreseen due to such construction activities 6. Scale of activities including civil work, influx of labour and their activities at the project sites. 7.Their expectations from the project	
5	**Dairy Complex Tajpur Road, B Block, Date 19/02/2020, Time: 5:00 PM Number of Participants-14**	1.Opinion overhead tank being constructed in their locality 2. Consent about the civil construction being under taken in the vicinity 3.Impact on their day to day work routine from digging and construction 4.Any reservations about construction activity in their neighbourhood 5.Problems foreseen due to such construction activities 6. Scale of activities including civil work, influx of labour and their activities at the project sites. 7.Their expectations from the project	20. Concerns: There is a big drain/sewer line between Tajpur Road & Tibba Road which can impact the drinking water supply, Suggested measures : precautions to be taken so that the water doesn't get contaminated 21. Concerns: Greenery will be lost due to construction Suggested measures: plantation be done in the area 22. Concerns: water scarcity Suggested measures : Separate OHSRs should be constructed in 3 the different blocks of the Dairy complex
6	**NKH Park, Near Cheema Chowk, ward no. Date 22/02/2020 Time: 11:00 AM, Number of Participants-7**	1.Opinion overhead tank being constructed in their locality 2. Consent about the civil construction being under taken in the vicinity 3.Impact on their day to day work routine from digging and construction 4.Any reservations about construction activity in their neighbourhood	23. Concerns: Before initiating the construction it should be confirmed if the land of NKH Park Cheema Chowk, belongs to Improvement Trust or MCL Suggested measures : only after clarity and due approval should the OHSR be constructed 24. Concerns: tampering of pipeline takes place Suggested measures : OHSR body should made up of steel so that there can be no tampering 25. Concerns: damaged, inaccessible roads during construction Suggested measures : pipelines should be

Sl. No.	Date and Location	Questions Discussed	People's suggestion
		5.Problems foreseen due to such construction activities 6. Scale of activities including civil work, influx of labour and their activities at the project sites. 7.Their expectations from the project	reconstructed at the earliest 26. Concerns: Digging in the residential/ commercial areas Suggested measures: should be done during night hours , so that the traffic should not be inconvenienced 27. Concerns: Beautification of the area Suggested measures : After the construction work park should be beautified 28. Concerns: Emergency/ Alternate arrangements need to be in place for fire safety Suggested measures : There should be a separate arrangement for fire safety as Cheema chowk is an industrial area.
7	**Income Tax Department land, opposite government Polytechnic college for girls, Date :21/02/2020, Time: 9:00 AM, Number of Participants-6**	1.Opinion overhead tank being constructed in their locality 2. Consent about the civil construction being under taken in the vicinity 3.Impact on their day to day work routine from digging and construction 4.Any reservations about construction activity in their neighbourhood 5.Problems foreseen due to such construction activities 6. Scale of activities including civil work, influx of labour and their activities at the project sites. 7.Their expectations from the project	29. Concern: Greenery around the OHSR Suggested measures: Around the OHSR beautification and plantation should be done; during OHSR construction & for water supply people from locality be given employment 30. Concerns: Inconvenience during construction phase Suggested measures: convenience of residents be taken into consideration during construction & laying of pipelines 31. Concerns: Broken/ damaged roads during construction Suggested measures : After construction work roads should be reconstructed at the earliest
8	**New National Colony, Date :18/02/2020, Time: 11:00 AM, Number of Participants-8**	1.Opinion overhead tank being constructed in their locality 2. Consent about the civil construction being under taken in the vicinity 3.Impact on their day to day work routine from digging and construction	32. Concern: densely populated and several houses around the proposed site Suggested measures: so during OHSR construction precautions need to be taken 33. Concerns: Safety requirements Suggested measures: OHSR should be surrounded by a boundary wall

Sl. No.	Date and Location	Questions Discussed	People's suggestion
		4.Any reservations about construction activity in their neighbourhood 5.Problems foreseen due to such construction activities 6. Scale of activities including civil work, influx of labour and their activities at the project sites. 7.Their expectations from the project	

Details of Consultation at Amritsar

S. No	Site of Amritsar OHSRs
1	Taj Palace ward no 40 Date-21/02/2020, Time 11:00 AM, Paticipants-42
2	Pind Khankot Sardanawalan ward No 32 Date-21/02/2020, Time 1:00 PM, Participants-29
3	Ward no 54, Pipli Saheb Gurudwara, Date-21/02/2020, Time 3:00 PM, Participants-28
4	Ward No 8, Basant Avenue, Basant Park, Date-22/02/2020, Time 3:00 PM, Participants-26
5	Gurnam Nagar Ward no 36 Date-24/02/2020, Time 10:00 AM, Participants-30

Table : Outcomes of Consultation and Integration into Project Design

Sl. No.	Date and Location	Questions Discussed	People's suggestion
1	**Taj Palace ward no 40 Date-21/02/2020, Time 11:00 AM, Paticipants-42**	1.Opinion about overhead tank being constructed in their locality 2. Discussion about the civil construction being under taken in the vicinity 3.Impact on their day to day work routine from digging and construction 4.Any reservations about the construction activity in their neighbourhood 5.Problems foreseen due to such construction	34. Concerns- appropriate height of OHSR to maintain the flow of water Suggested measures: Greater Height 35. Concerns: Availability & timing of water Suggested measures: Availability of 24x 7 water supply in the area 36. Concern: Safety issues Suggested measures: safety should be ensured 37. Concern: Maintenance of greenery Suggested measures: plantation of trees around the OHSR

Sl. No.	Date and Location	Questions Discussed	People's suggestion
		activities 6.Scale of activities including civil work, influx of labour and their activities at the project sites. 7.Their expectations from the project	
2	**Pind Khankot Sardanawalan ward No 32 Date-21/02/2020, Time 1:00 PM, Participants-29**	1.Opinion for overhead tank being constructed in their locality 2. Consent about the civil construction being under taken in the vicinity 3.Impact on their day to day work routine from digging and construction 4.Any reservations about the construction activity in their neighbourhood 5.Problems foreseen due to such construction activities 6.Scale of activities including civil work, influx of labour and their activities at the project sites. 7.Their expectations from the project	38. Concern: lack of OHSRs in other areas Suggested measures: install OHSRs also at other locations 39. Concerns: Quality of water Suggested measures: ensure good quality of water 40. Concerns: Tampering of OHSR Suggested measures: security at the OHSR site 41. Concerns: water pressure need to be adequate Suggested measures: Height of OHSR to be proper.
3	Ward no 54, Pipli Saheb Gurudwara, **Date-21/02/2020, Time 3:00 PM, Participants-28**	1.Opinion for overhead tank being constructed in your locality 2. Consent about the civil construction being under taken in your vicinity 3.Impact on their day to day work routine about digging and construction 4.Any reservations about the construction activity in their neighbourhood	. 1. Concerns: water quality is poor Suggested measures: Good water quality 2. Concerns: debris from vehicles used in construction Suggested measures: Vehicles used for carrying construction materials should be covered. 3. Concerns: Emergency Measures: provision of extra motors for emergency.

Sl. No.	Date and Location	Questions Discussed	People's suggestion
		5.Problems foreseen due to such construction activities 6.Scale of activities including civil work, influx of labour and their activities at the project sites. 7.Their expectations from the project	
4	**Ward No 8, Basant Avenue, Basant Park, Date-22/02/2020, Time 3:00 PM, Participants-26**	1.Opinion overhead tank being constructed in your locality 2. Consent about the civil construction being under taken in your vicinity 3.Impact on their day to day work routine about digging and construction 4.Any reservations about the construction activity in their neighbourhood 5.Problems foreseen due to such construction activities 6.Scale of activities including civil work, influx of labour and their activities at the project sites. 7.Their expectations from the project	4. Concerns: This is the only park that most people of the area visit, Suggested measures: alternate location at Government Medical College, nearby Basant Park for OHSR construction

PHOTOGRAPHS OF COMMUNITY CONSULTATIONS

Basant Park

Manna Singh Nagar, Ludhiana 15/02/2020

Nehru Rose Garden, Ludhiana 18/02/2020