PUNJAB URBAN GOVERNANCE AND WATER SUPPLY IMPROVEMENT PROJECT (PUGWSIP)

Draft Report

Environmental and Social Management Framework

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Prepared for

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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
ESMS	Environmental and Social Management System
ESS	Environmental Social Standard
GRM	Grievance Redress Mechanism
LMP	Labour Management Plan
LSC	Ludhiana Smart City
MC	Municipal Corporation
MCA	Municipal Corporation of Amritsar
MCL	Municipal Corporation Ludhiana
MoEFCC	Ministry of Environment Forest & Climate Change
MoU	Memorandum of Understanding
OHSR	Over Head Service Reservoirs
PIU	Project Implementation Unit
PMIDC	Punjab Municipal Infrastructure Development Company
PMU	Project Management Unit
SDG	Sustainable Development Goals
SEP	Stakeholder Engagement Plan
SPCP	State Pollution Control Board
TOR	Terms of Reference
WB	World Bank

EXECUTIVE SUMMARY

Introduction

There is a huge demand and supply gap in urban water supply in Punjab. The drinking water supply systems in the cities and towns of Punjab are based on ground water only which is exhausting the supply. The Government of Punjab (GoP) is planning to implement a water supply improvement project in the two largest cities of Punjab – Amritsar and Ludhiana – 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 – (1) be compliant with all applicable federal/national, state and local laws and regulations related to environmental and social matters; and (b) comply with the 10 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 the World Bank and its borrowers to identify, assess, mitigate and report on project E&S risks.

This document is intended to serve as the ESMF for the Punjab Urban Groundwater Supply Improvement Project (hereafter referred to as PUGSWIP).

Project Description

The water supply in Amritsar and Ludhiana is currently from ground water. The current water supply system is inefficient and allows for a lot of water loss and wastage as households are not incentivized to save. As a result, the cites of Amritsar and Ludhiana are experiencing over exploitation of scarce ground water resources, excessive water supply resulting in higher power charges, low cost recovery and high volumes of waste water generation. On top of that, water quality is a serious concern as the ground water is contaminated with Arsenic, Selenium and with Nitrate. Most of the ground water are supplied without appropriate water treatment. High arsenic levels in people may lead to cancer causing keratosis and hyperkeratosis.

The proposed project will migrate water supply from rapidly depleting and highly contaminated decentralized ground water sources to a centralized treated surface water source. The project will have the following components.

Component 1: Urban Management Strengthening and Project Management

Sub-component (i): Institutional improvements in urban governance, finance and water supply. This sub-component will strengthen the systems and capacities of Amritsar Municipal Corporation (AMC) and Ludhiana Municipal Corporation (LMC) in a number of priority areas that enhance their capabilities in urban management. This will include but is not limited to strengthening the MCs' ability to enhance own-source revenues, developing and operationalizing capital investment and asset management plans and systems, strengthening public financial management systems in the MCs, enhancing the efficiency of MC operations through targeted e-governance measures and establishing and operationalizing city-based WSS utilities.

Sub-component (ii): Project management, including fiduciary and safeguards management. This sub-component will support various project management activities, including but not limited to, the operations of the Project Management Unit in PMIDC and Project Implementation Units in the two MCs, as well as communications and outreach activities at various levels.

Component 2: Water Supply Improvements
The project will support replacing groundwater-based small independent systems which are spread across the cities and drawing contaminated water (Arsenic is present in Amritsar and Nitrates and Heavy metals are present in Ludhiana) with new bulk water supply systems. This will include construction of raw water systems from canals (MBT canal in Amritsar and Sarhind canal in Ludhiana) of the Sutlej river system and technology-based water treatment plants (440 MLD in Amritsar and 580 MLD in Ludhiana) to meet water demand of the year 2050 as per GoI norms. The treated water will be distributed through two new transmissions lines with pumping systems: one covering the northern part of the city and another covering the southern part. The water shall be pumped in such a way that central computerized supply management systems will ensure that water is always available for distribution to consumers in the supply reservoirs (mostly the overhead reservoirs) making continuous water supply (24/7) possible in the cities. The entire system will be packaged into one Design, Build and Operate contract and implemented through the MCs which will set up their own city-based utilities for constructing and delivering services to consumers with well-defined service delivery accountabilities

COMPONENT 3: PROJECT MANAGEMENT. This component will support various project management activities, including but not limited to operations of the Project Management Unit in PMIDC, including project coordination and supervision, safeguards and fiduciary support and monitoring, M&E, communications and outreach, capacity building.

E&S Risk Classification of PUGSWIP

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 a 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 distribution lines between WTPs and Overhead Service Reservoir(OHSRs); and (d) construction of new OHSRs and repairs of existing OHSRs. The adverse environmental impacts related to Component 2 activities include: (i) the sludge generation 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. 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".

The social risk is classified as ‘high’, considering that acquisition of large private land parcels as well as potential livelihood related impacts for constructing the WTPs and OHTs and laying of the transmission lines through the dense-congested urban localities. The project will most likely cause long and short term 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. There will be substantial labour influx, especially in sites of construction of Water Treatment Plants, which are expected to be located in suburban areas of municipalities or small villages with ‘low absorptive capacity’; and Clear Water Reservoirs/Zonal Reservoirs, which will be located within urban localities with proximity to residential colonies. Both these categories of sites may require setting up of labor camps increasing the likelihood of sexual abuse and other forms of gender-based violence (GBV). Existing low client capacities to manage social issues emerging from project investments, engaging with communities/ citizens groups, understanding issues of equity and inclusion or undertake large scale social mobilization also raises the risks for the project.

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, cultural heritage site, presence of ethnic minority populations in the targeted cities. Detailed baseline environment of the Project area (covering biophysical and socioeconomic environment) will be collected and presented in the sub-project ESIAs. A general baseline information is given in section 5 of this ESMF.

Identification of Potential Environmental and Social Impacts and mitigation

The environmental and social impact assessment concluded that the project activities would have moderate to high adverse environmental and social impacts. 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 to ensure that all the project activities are screened , and those activities are supported where the potential environmental and social risks and impacts are predictable, not significant in magnitude and site specific with low probability of serious adverse effects to human health and/or environment

Potential adverse Environmental impacts

- Impact on air & noise due to construction, burrowing, trenching, storage & stockpile of raw material & wastes, including hazardous types
- Impact due to transportation of construction & other raw materials from source to site
- GHG emission from construction activities
- Road safety & traffic, increased traffic near OHSR residential areas
- Risk due to natural calamity like earthquake and Flood
- OHRS impacts on aesthetics value
- Waste generation from labour camps
- Biodiversity may have possible impact during construction at intake & WTP; disturbance due to noise; labour inducted impacts – waste disposal, accidental fire, poaching.
- Aquatic ecology may be impacted due to intake point development due to emissions, wastes & vibrations;
- Impact because of sludge effluents during WTP operation.

Potential Social Impacts

- Labour influx, impact on local community, gender-based violence, grievances, OHS
- Land acquisition for WTPs and OHTs
- Downstream water allocation impact; fisheries, irrigation.
- Restriction & eviction of squatters, hawkers, etc, impact on livelihood, possible forced eviction
- Impact on vulnerable groups including aged, women & disabled
- Change in property values due to construction of OHSR
- Possible restrictions on use of parks & other common use properties & resources
- Possible impact on cultural assets, sites due to earth work

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 10 ESSs are used to identify, avoid, and mitigate the potential negative environmental impacts associated with projects funded by the bank and enhance the effectiveness of the positive impacts. This Ludhiana and Amritsar Water Supply project has been classified as "substantial" for environmental risks and impacts and "high" for social risks and Impacts. According to initial assessment, other than ESS7 and ESS 9, all ESSs of the World Bank will be applicable to the project.

Procedure for Environmental and Social Management Plan (Framework ESMP)
All subprojects under the Water supply improvement project shall be screened to determine the appropriate level of environmental and social impact assessment and management that would be needed for each subproject. Subprojects with no noticeable impacts will be cleared from an environmental and social perspective while those with significant potential impacts shall be subjected to preparation and implementation of sub-project specific ESIAs, ESMPs and other relevant management plans and measures in line with the ESSs. PMIDC would hire independent consulting firms to prepare these sub-project specific ESIAs and management plans based on detailed infrastructure designs. These assessments and plans will have to be reviewed and cleared by the Bank before commencement of the subproject.

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 GRM will be structured to accommodate everyone from the public and private to the general public. In addition, clear procedures must be established for complaints and made easily available to the public by way of public notices, and all other means of formal & informal process. The responsibility, implementation of the GRM will rest with the Standard's specialists of the City Level which shall function as the PMU.

The ESMF has been prepared in accordance to 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 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 Water supply Improvement Project will be disclosed by PMIDC/MC in a similar manner as that of the ESMF.

Institutional Arrangement
Implementation arrangements for PUGWSIP will be fully streamlined into the existing government structure at the State and Local Government levels. PMIDC will have a Social, Environmental and Communication Cell (SEC) which will coordinate implementation of the ESMF. PMIDC will appoint a PMC for monitoring the contractor activities and implementation of ESMF. In the institutional arrangement procedure, Project Director (PD), and Team Leader/Deputy Team Leader will be directly involved. The PD and DPD will be supported by Environmental Specialist and Social Development Specialist. Under PM/PIU, there will be relevant officials and consultants to support the PD. The SEC

and PMU will submit monthly and quarterly progress reports on Environmental and Social Compliances to GM (P&D). After reviewing it will be sent to World Bank.

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. Therefore, a Social, Environmental and Communication cell is recommended. This cell will work independently to monitor and supervise the ESMF for the project. The PMC will work under the PMU. 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 PMU.

1 INTRODUCTION

1.1 Background

The Government of Punjab (GoP) has taken a decision to improve the water supply systems in Amritsar and Ludhiana. The Municipal Corporations in the two cities currently supply ground water from over 800 tube wells in Amritsar and over 1000 tube wells in Ludhiana using a combination of deep and shallow tube wells unevenly spread across the city. The tube wells are located in the middle of urban habitation, some close to drains and informal solid waste dumps and are not protected. The supply of water system in the two cities are decentralized micro-systems with distribution lines connecting individual tube wells directly to nearby individual beneficiaries such as households, commercial establishments and other bulk water users. In the old city area, tube well water supply is stored in overhead tanks supplying multiple households, covering less than 5-15% of the total supply area. The current system is inefficient and allows for significant water loss and wastage as households are not incentivized to save water. In addition, the service delivery is limited ranging from 10-12 hours per day.

Water quality is a serious concern as 72% of water samples tested by GoP's Department for Water Supply and Sanitation (DWSS) labs in Amritsar was found to be contaminated with Arsenic, 27% of which had more than double the permissible limit. In Ludhiana, DWSS tested water from 40 sources show that 30% samples are contaminated with arsenic, 14% with Selenium and 22% with nitrate. While the water supplied via tube wells generally tastes good for consumption, it is not treated. A small number of tube wells may use rudimentary chlorination (hypo chloride or bleaching power) to minimize bacteriological contamination. The Municipal Corporations don't have quality water testing laboratories and quality checks generally not carried out. High arsenic levels in people may lead to cancer causing keratosis and hyperkeratosis. As informed by DWSS, over 352 habitations are affected with arsenic in rural areas of Amritsar district alone. As per the central ground water board survey, shallow sources are badly affected with arsenic. Some samples also had traces of lead and other heavy metals. Since ground water exploitation started in the recent past, diseases form arsenic may take 5 to 20 years to appear and hence shifting to surface water is a priority for the GoP.

Within this context, the Punjab Urban Governance and Water Supply Improvement Project (PUGWSIP) aims to support strengthening of urban governance, finances and delivery of sustainable water services in the cities of Amritsar and Ludhiana. The proposed project investment is expected to cost US$270 million of which IBRD will finance 70 percent and GoP 30 percent.

1.2 Project Components

The project has the following three components:

- Component 1: Strengthening urban and water supply service management
  - Sub-Component 1a: Strengthening water service management
  - Sub-Component 1b: Strengthening urban governance and finance
- Component 2: Improving water supply infrastructure
- Component 3: Project management

The detailed project description has been provided in chapter 2.

1.3 Purpose of the ESMF

The main purpose of the ESMF are to:

- Provide tools and guidelines for risk categorization of all the sub-projects to be implemented under PUGWSIP for which detail information are not available at this stage.

- Set out the detailed procedures to be followed for various sub-project categories to assess and manage environmental and social risks.
- Consider in an integrated manner the potential environmental and social risks, benefits and impacts of the program and identify measures to avoid, minimize and manage risks and impacts while enhancing benefits.
- Ensure all relevant environmental and social issues are mainstreamed into the design and implementation of the sub-projects.
- Review of the potential and likely impacts of the project activities and develop the environmental and social screening procedure of the sub-projects.

1.4 Approach and Methodology

This ESMF has been prepared in accordance with all applicable World Bank Standards, Policies, Guidance Notes, IFC ESG Sector Guideline, and the Indian, Punjab State & Local Govt. relevant regulations, acts, laws, standards & guidelines. The following approaches were applied:

1.4.1 Desktop Study & Literature Review

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

1.4.2 Data Collection

- 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
- Data collection and analysis of environmental and social baseline pertaining to the study area

1.4.3 Stakeholder Consultations

- Consultations with borrowers, beneficiaries/affected parties in the participating cities and also develop the consultation process.

More details on stakeholder consultation is presented in Chapter Seven.

2 PROJECT DESCRPTION

2.1 Project design

The Government of Punjab (GoP) has taken a decision to make key municipal corporations, starting with Amritsar and Ludhiana, responsible for future asset creation and share capital expenditure. To improve the quality of water service delivery, cities need immediate capital investments and change in management practices. Key institutional actions to achieve this on the water sector are a) WSS operations focusing on full operational cost recovery, b) increased ownership from the municipal corporation to WSS financing; and be responsible for service delivery and c) modern governance structure for WSS operations. Key actions on the ULB governance side require addressing the fundamental causes of infrastructure backlogs and service deficiencies, which are rooted in institutional gaps and lack of financial sustainability. The Government of Punjab (GOP), in June 2018, through Government of India (GOI) Department of Economic Affairs (DEA), requested the World Bank for support to implement 24/7 continuous water supply projects in Amritsar and Ludhiana. 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.

Amritsar and Ludhiana Municipal Corporations currently supply ground water from over 800 tube wells in Amritsar and over 1000 tube wells in Ludhiana using a combination of deep and shallow tube wells unevenly spread across the city. The tube wells are located in the middle of urban habitation, some close to drains and informal solid waste dumps and are not protected. The supply of water system in the two cities are decentralized micro-systems with distribution lines connecting individual tube wells directly to nearby individual beneficiaries such as households, commercial establishments and other bulk water users. In the old city area, tube well water supply is stored in overhead tanks supplying multiple households, covering less than 5-15% of the total supply area. Supply to beneficiaries is over 10 hours a day. The current system is inefficient and allows for a lot of water loss and wastage as households are not incentivized to save. A fixed tariff for water is charged however, a large fraction of households is exempted. As a result, the cites of Amritsar and Ludhiana are experiencing over exploitation of scarce ground water resources, excessive water supply resulting in higher power charges, low cost recovery and high volumes of wastewater generation.

2.2 Overall Design and Scope:

The project design supports the following three components:

COMPONENT 1: STRENGTHENING URBAN AND WATER SUPPLY SERVICES MANAGEMENT This component will strengthen the systems and capacities of Amritsar Municipal Corporation (AMC) and Ludhiana Municipal Corporation (LMC) in a number of priority areas that enhance their capabilities in urban management and water supply service delivery. This will include but is not limited to strengthening the MCs' ability to enhance own-source revenues, developing and operationalizing capital investment and asset management plans and systems, strengthening public financial management systems in the MCs, enhancing the efficiency of MC operations through targeted e-governance measures and establishing and operationalizing city-based WSS utilities.

Sub-Component 1a: Strengthening water service management This sub-component will support the following activities:

(i) *Establishment of water and wastewater utilities in Amritsar and Ludhiana MCs*. Traditionally, Punjab

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

Water Supply and Sewage Board (PWSSB) had been responsible for implementing all water supply projects; and also operating the water supply system in select cities. In case of Amritsar and Ludhiana, both municipal corporations are managing water and waste water services. The corporation are able to recover only 20-30% of operating costs and rest is being cross subsidizing. That is causing heavy dent in municipal finance and as a result of this, other civic services are impacted. Therefore, the project scope will include setting up a professionally managed water utility; building systems including financial management; hiring staff and building the capacity of staff. The project will support the cost of establishing the utility in both cities for the first two years of implementation. Each ULB will set up a fully owned WSS utility as a Company under the Companies Act 2013 and authorize the companies to provide WSS services through the provisions of the Municipal Corporation Act. It is envisaged that the newly incorporated utility will be given the technical and administrative powers, including providing WSS services, setting and collecting tariff, securing subsidies for full cost recovery as needed. The creation of city-level utilities will mark a transition from current department style operations (Water Supply and Sewage department or WSSD) within the ULB (headed by superintending engineer) which have limited autonomy, professionalism and accountability. Further, the GoP and the ULB will delegate all functional, financial and operational powers to the Board of Directors of the Utility Company. The Mayor and Commissioner of the municipal corporation are likely to be nominated as the Chairperson and the Managing Director of the WSS company. The head of WSS function will be a Chief Executive Officer.

(ii) *Technical assistance to strengthen capacities of the WSS utilities* with respect to staffing, accountability, engineering, contract management, M&E, citizen outreach, billing and collection. Currently there are no formal specifications outlining the responsibilities of the WSS service department, its performance standards or financial support. The operations are headed by a senior water supply engineer, who is appointed by the State Government amongst a pool of engineers in municipal services. Traditional constraints of public sector employment, such as lack incentives for performance; poor accountability; weak autonomy to execute job responsibilities; poor training and career development opportunities etc. apply to WSS function also. Under the project the following will be implemented to strengthen water services:

- ***Setting up of water utilities companies in PPP mode in Amritsar and Ludhiana****:* The project will provide technical assistance for executing a public-private partnership (PPP) in water supply management. The WSS Company will enter into performance-based contracts with private operators for upgrading the service levels and for operations and maintenance. The water company will have responsibilities for a) contract and performance management, b) long term planning of water and supply and sewage services, c) financial planning of WSS operations, d) customer feedback and interface and e) interface with statutory bodies like pollution control board. The company will develop an organization chart, staffing structure and HR policy. ULBs may second staff to the company to meet part of the requirements. The company will have the freedom to recruit/contract a multi-disciplinary staff (including technical, financial, IT, customer service and E&S standards) as per the approved organization chart, as compared to the current practice where the department is only staffed with engineers.
- ***Accountability and transparency*****:** WSS Standards will be published by the ULBs, based on the Service Level Benchmarks of Government of India. It will also specify regular reporting requirements. The Board of Directors of the two companies will develop performance evaluation framework for the companies based on GoI's WSS performance standards. ULBs may also link the subsidy provided to the company to performance standards. The company will develop a disclosure plan. The company will customize and maintain the existing online e-governance platform available in the ULB for customer grievance redressal and report status of citizen complaints to the ULB regularly. The company will conduct annual customer satisfaction survey and publish findings in the ULB website to promote social accountability. The company

will publish daily, weekly and monthly operational reports with operational data such as quantum of water/wastewater produced/ supplied/ collected/ treated, water quality, disruptions, complaint redressal etc. The company will also prepare monthly, quarterly and annual performance reports, such as coverage, quality of service, billing and collection, financial performance, customer feedback etc. The company will publish audited annual reports. The company will prepare and implement a communication strategy.

- ***Revenue model and financial sustainability*:** The company will have two sources of revenue, a) User charges(tariff) for water supply and sewage and b) subsidy from ULBs for water supply and sewage. As compared to the current practice of relying on ad hoc subsidies from the municipal budget, the ULB will provide earmarked subsidies for WSS out of the GOP transfers to the ULB. The ULBs will also pass on to the WSS company any WSS specific capital or revenue grant received from GoP or GoI. The company will prepare the annual revenue requirements for the medium term (3 to 5 years). The Board of Directors of the company will review the revenue requirements and recommend tariff structure and annual subsidy required, if tariff is not sufficient to recover costs fully. Further, the ULB will authorize incremental block volumetric tariff for WSS with concessions for urban poor. This will mark a significant improvement in cost recovery when compared to the current practice of a flat monthly tariff with exemptions for more than 50% of the customers. Under the proposed arrangement, tariff fixation will continue to be the responsibility of the ULB, however, tariff for domestic customers will be approved by ULBs; while tariff for commercial customers will be decided by the Board of Directors of the company. The ULBs will also approve annual subsidy based on the recommendations of the Board of Directors. At present the ULBs receive a share (11%) of GST collections of the State of Punjab as Inter-Governmental Fiscal Transfers. This share will be split towards WSS (2.5% for WSS and 8.5% for other ULB functions) and transferred to the WSS Company by the ULB. The revision and setting of tariffs will be further supported following the implementation of the World Bank financed state level Development Finance Framework (DPF) loan and its corresponding reform action taken on a State-wide water tariff policy, the MCs would be able to operationalize this in their jurisdiction through fixing and revising their own water tariff rates.

Sub-Component 1b: Strengthening urban governance and finance. This sub-component will strengthen the systems and capacities of AMC and LMC in several priority areas that enhance their capabilities in urban management. This will include but is not limited to:

(i) *Own source revenue enhancement*: establishing norms, strengthening systems, improving capacities to strengthen local revenue collection

(ii) *Expenditure management and PFM improvements*: strengthening systems, reforming workflow rules and arrangements, improving capacities to strengthen planning, budgeting, budget execution, financial management, controls and audit functions within MCs.

(iii) *Improve Asset Management and Capital Investment Planning (CIP) capabilities*: The Punjab Municipal Corporation Act (GoP 1976) stipulates some fragments of asset management, such as ownership, acquisition and disposal of assets and liabilities (Article 3 (1), Articles 170 through 172 and 427); but the Law does not provide a legal framework or guidance for comprehensive asset management or establishing value-based asset registers that would be good enough to establish opening balance sheets for and performing accrual accounting. Amritsar and Ludhiana MCs have some limited experience with systems and procedures related to basic Asset Management (AM) with dedicated entities or teams to manage ULB assets. There are no dedicated teams or units for high level strategic AM and MCs lack established AM policies, strategies or plans. Demand management is sporadic and intermittent or nonexistent. MCs have no experiences or sufficient knowledge on the concept and procedures of life-cycle AM or capital investment planning (CIP). Lack

of detailed asset records, lack of complete and reliable asset registers hampers effective asset management and capital investment planning. Under a World Bank financed state level Development Finance Framework (DPF) loan, the GoP will be passing a state level Asset Management legislature that would help establish the legislation and regulatory framework to ensure MCs adopt and operationalize implement good AM practices starting with AMC and LMC. The Project will provide financial and technical to support mobilizing a consultant firm to help the MCs develop reliable asset registers and institutionalize capital investment planning and lifecycle approached asset management, but also to move from current reactive AM practices to preventive AM and then further towards climate safe and disaster resilient development modalities. Strengthening capabilities of MCs to execute projects, developing and operationalizing capital investment planning and asset management systems will feed into improving AMC's and LMC's annual budgetary processes.

(iv) *Enhancing the efficiency of MC operations through targeted e-governance measures*. PMIDC has taken up an ambitious task to drive e-governance (m-seva) across ULBs in the state. There are 167 ULBs in the state of Punjab offering digital services ranging from - web portals; ULB dashboards, WSS billing, collections and new applications; public grievance redressal; trade licenses; fire NOCs; human resource management; finance as part of the e-gov efforts. The development and deployment of *m-Seva* applications is progressing swiftly across all the ULBs. The deployment of all essential modules (including finance) is to be completed across all ULBs by March 2020. However, adoption has been slow in large corporations such as Amritsar and Ludhiana where the ULBs had already started with their own version of e-governance modules. The benefits of having a common platform was expressed by both AMC and LMC however, deployment of modules have been slower due to the size of data migration. The ULBs have also requested customization of process of tax/charges collection through the *m-sewa* modules. The project will support AMC and LMC with TA to migrate data, customize and build required capacity.

- ***Strengthening capacity.*** ULBs face the challenge of the availability of trained staff to handle their day-to-day citizen service demands. At both the ULBs (Amritsar and Ludhiana MC) only about 50% of the sanctioned staff posts are filled up. Though there are initiatives for increasing revenue collections, lack of dedicated staff is bringing up challenges. There are no dedicated IT cells in both AMC and LMC. A single officer is monitoring the activities of software vendors, citizen IT issues/grievance, Revenue MIS reports etc. in addition to his regular role as in-charge of a section. This may lead to issues at the time of capacity building for m-sewa. As both the ULBs move into m-sewa domain, effective capacity building will be one of the single most factor contributing for successful implementation. Post-implementation of m-Sewa (PMIDC) software in Ludhiana MC is needed to promote online payment of taxes especially at the Common Services Centers (CSCs).
- ***GIS and Unique ID (UID) integration***. AMC and LMC are aggressively pursuing UID integration along with physical plate installations in residences of citizens. After m-sewa implementation, the existing UIDs are planned to be linked with the 10-digit m-sewa unique property number (e.g. 1001018125). This will create database, security, MIS challenges as well as confusion among citizens if not managed well by the MCs. A common standard in implementation of GIS across water supply services, property taxation etc. is needed, considering the smart city needs of both ULBs. The Project will support AMC, LMC and PMIDC in the integration efforts.
- ***Adding modules to the existing m-seva e-governance efforts*.** Along with property and water, there is a need to streamline trade license and advertising tax to enhance ULB revenues. Other modules such as Advertisement, Estate, asset management and works management will be considered under the project.

COMPONENT 2: IMPROVING WATER SUPPLY INFRASTRUCTURE. The project will invest in a water treatment plant and core infrastructure (main clear water sump/tanks, transmission lines and overhead storage reservoirs (OHSRs) in both Amritsar and Ludhiana.[2]

Overall Design and Scope: the strategy for improving the water services in Amritsar and Ludhiana is to switch to surface water and primarily draw from canals passing through the cities. These canals have off-take points from regulators established on the rivers Ravi and Sutlej located upstream. The raw water drawn from these canals will be pumped to Water Treatment plants (WTP) constructed under the project. The treated water will be collected in clear water tanks within WTP premises and will be supplied through pumping to different neighbourhoods in the city to deliver water at the local service reservoirs connected via newly built distribution network. The design of WTPs capacity will take into account current usage levels of 200-300 lpcd which is expected to reduce over time to 150 lpcd (national standard for large cities in India). The system would be constructed to deliver high per capita supply (over 150 lpcd) initially to and can remain supplying at a service level of 150 lpcd even for higher population growth rates upto the year 2055. This approach will eliminate further investments till year 2055.The strategy is also to reduce consumer demand over time through appropriate tariffs to discourage wastage; implement good communication campaigns to change behaviour; and engage citizens on appropriate water use. Investments proposed under the project include raw water systems, water treatment, new service reservoirs and transmission of treated water to local reservoirs (new and old). The proposed systems eliminate the use of poor-quality ground water. A fraction of the existing tube wells will be retained to supply minimum water requirements during canal closures during summer for a month as per available five to ten years observed records. The bulk treated water will be supplied via existing water distribution network which are currently very old but in usable condition. Hence, piped network replacement is not proposed within the scope of the project. The cities will use various sources of funding to replace old aged leaking pipes progressively starting from high density old city areas to low density recently developed areas. The new distribution network, to be developed by cities (may be included in a follow-on World Bank financed operation) will also have provisions to provide water meters and district metered areas (DMAs) to manage 24/7 supplies with minimum Non-Revenue Water (NRW).

COMPONENT 3: PROJECT MANAGEMENT

This component will support various project management activities, including but not limited to:

- operations of the Project Management Unit in PMIDC, including but not limited to, project coordination and supervision, environmental and social and fiduciary support and monitoring, M&E, communications and outreach, capacity building
- Project Implementation Units in the two MCs, including but not limited to, project management, civil works supervision and monitoring, environmental and social and fiduciary implementation, M&E, communications and outreach, capacity building
- Communications strategy and outreach activities covering key stakeholders in both MCs and at the state level.
- Technical assistance to strengthen social and environmental management and fiduciary management in the two MCs.

2.2 Project Components and Impacts

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

[2] Distribution lines and household connections downstream to OHSRs are not included in the scope of this project. These may be considered under a follow-on operation.

Table 2.1: Component wise potential impact evaluation

Component	Subcomponent/ Activities	Potential Environmental and Social Impacts	Inclusion in ESMF
Component 1			
STRENGTHENING URBAN AND WATER SUPPLY SERVICES MANAGEMENT	1a: Strengthening water service management	No physical activities under component 1. This component will positively contribute to systemic 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 process and due diligence will need to be ensured to implement E&S measures during the project implementation following the ESMF. 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		
Component 2			
IMPROVING WATER SUPPLY INFRASTRUCTURE	▪ Diversion of surface water from canals to Water Treatment Plants (WTP) ▪ Construction of WTP ▪ Construction of pumping stations to pump water from canals to WTP and from WTP to OHST Construction of OHST at the local service reservoirs connected via newly built bulk transmission network	Component 1 will have potential environmental and social impacts because of construction activities , impacts include, among others, on the ambient water quality, erosion and sedimentation, air quality, noise, traffic / mobility / access, occupational & community health, labour influx, gender-based violence (GBV), involuntary resettlement & livelihood impacts; impacts of land acquisition, impacts to ecology and physical cultural resources.	• Initial screening of sub-project activity proposal and environmental and social management • ESIA, ESMP, RPF, LMP, SEP Development • Individual Env & Soc Screening and evaluation for each OHSR
Component 3			

Component	Subcomponent/ Activities	Potential Environmental and Social Impacts	Inclusion in ESMF
PROJECT MANAGEMENT	• Project management activities including – project coordination, supervision, technical support, communication strategy, implementation, etc	No environmental or social 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 impacts. The World Bank environmental and social standards that are applicable for PUGWSIP are: (i) ESS1 Environmental & Social Assessment, (ii) ESS 2 Labour Management, ESS Cultural Resources, ESS Biodiversity, ESS Community Health, ESS Resource Efficiency, ESS 5 Land Acquisition & Involuntary Resettlement and ESS 10 Stakeholder Engagement.
- 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 Municipal Area

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 landuse of Ludhiana city is given in Figure 2.1 below.

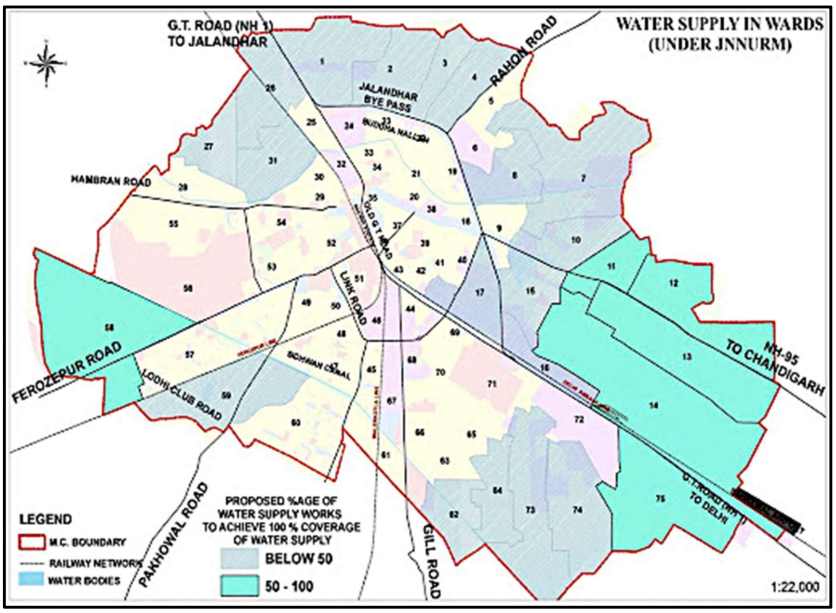


Figure 2.1: Ward map of Ludhiana

The topography of Ludhiana city and its surrounding areas is typically representative of an alluvial plain. The city is centrally located in the plain region which is marked for its flatness and featurelessness. The elevation of the city with reference to Mean Sea Level (MSL) ranges between 248 meters in the East to 244 meters in the west in a gentle slope.

Water Demand

Although the city has experienced high population growth due to rapid industrialisation in this past, evidence indicates that this growth has been stable in the last 3-5 years and a good proportion of youth are said to be migrating out of Punjab. The water demand based on historical population projects are as listed below:

Table 2.2: Estimated future population and water demand in Ludhiana

Parameter	2019 (Current)	2025 (Base Year)	2040 (Intermediate Year)	2055 (Ultimate Year)
Population (in Lakhs)	18.96	20.76	25.14	29.35
Raw Water Demand (in MLD)		408	495	578
Treated Water Demand (in MLD)		388	470	549

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 and drawbacks, 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 300cusec. As such, the new water system will draw water from the Sirhind Canal (at the tail point).

The Sirhind canal is the main feeding canal to Sidwan canal close to the canal junction point where it splits into three branches - the Abohar branch, the Bathinda branch and the Patiala branch - located close to Rampur village. Each of these further subdivide extensively to irrigate a large swathe of the Malwa region of Punjab. Once a partially arid zone, this area is now extremely fertile due to the water distributed by the canal network.

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 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 7.5 tmc (thousand million cubic feet) 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 50 acres 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. However, since an operator is allowed to design, build and operate the system, it is likely that the system will use best and modern technologies. 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 2.3: 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 2.4: 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

Table 2.5: Ludhiana Water Supply Improvements - Abstract Estimate

			(US$ 1)	70	INR)
S.No	Component	Scope	Basis	Amount	
				Rs Cr	US$ miln
1	Raw water drawl to be paid to Canal Authority	Job	Lumpsum	30.00	4.29
3	Raw water storage + pre-settling tank (Optional)	Job	Estimate	11.28	1.61
4	Raw water collection tank	Job	Estimate	0.20	0.03
5	Raw water pumping station	Job	Estimate	3.00	0.43
6	Raw water pumping machinery	Job	Estimate	17.78	2.54
7	WTP with quarters and boundary wall	Job	Estimate	232.00	33.14
8	Treated water collection tank	Job	Estimate	8.70	1.24
9	Subtotal Common Infrastructure	Job	Lumpsum		
10	Treated water pumping station	Job	Estimate	3.00	0.43
11	Treated Water Pumping Machinery	Job	Estimate	33.83	4.84
12	Transmission Pipeline System	Job	Estimate	464.86	66.41
13	Service storage	Job	Estimate	208.3	29.76
14	Subtotal of pumping, transmission and storage				
15	Subtotal bulk infrastructure				
16	Contingencies	%	5%		
17	Total Cost			1132.90	161.86

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 proposed as given the table below. 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 Main Pipeline System: There are two options for transmission system, (i) pumping to zonal reservoirs and further booster pumping to service reservoirs; and (ii) pumping directly to service reservoirs. While the option (i) with zonal reservoirs makes it less complex to manage pumping from the water treatment works,it requires additional land and establishment for zonal reservoirs and pumping systems which would increase the net operating cost. As such, it is proposed to directly pump to the service reservoirs and to facilitate the same, the service area is split between North zone and South zone. This branched network would have an inherent risk of high dependency on the trunk mains for each zone with no scope for alternate supply from other zone. It is suggested that the city authority during implementation may explore cross connecting loops between the north and south

zones duly investigating for locations where it is feasible to cross the railway lines. Such loops one located in the core city and other at the terminal ends of each zonal pipeline will facilitate a good operational flexibility to transfer water between the zones in times of any redundancy of any of the segments. A transmission hydraulic network model is developed to choose right size of pipes and in turn pumps with the objective of delivering water to maximum water level of existing and proposed service reservoirs. Variable Frequency Drives (VFDs) supported by a SCADA system with demand-based control logics would ensure the varying demand needs in the service area. The proposed routing of the transmission system had been surveyed by a walk-along survey to ensure availability of right of way and minimum crossings of railways or national highways to mitigate the risk of delays for obtaining permissions from respective authorities.

The proposed transmission pipeline system is proposed based on reconnoitre survey by walking along the possible roads. The pipelines are to be laid on the shoulder of the national highways. At many stretches the NH shoulder is encroached upon by private properties and hence the pipe may be required to be laid below the road probably extending to about 1m of road surface itself. As such, it is proposed to employ trenchless technologies or micro-tunnelling to reroute the pipelines and accordingly lumpsum provisions are made for any such requirements.

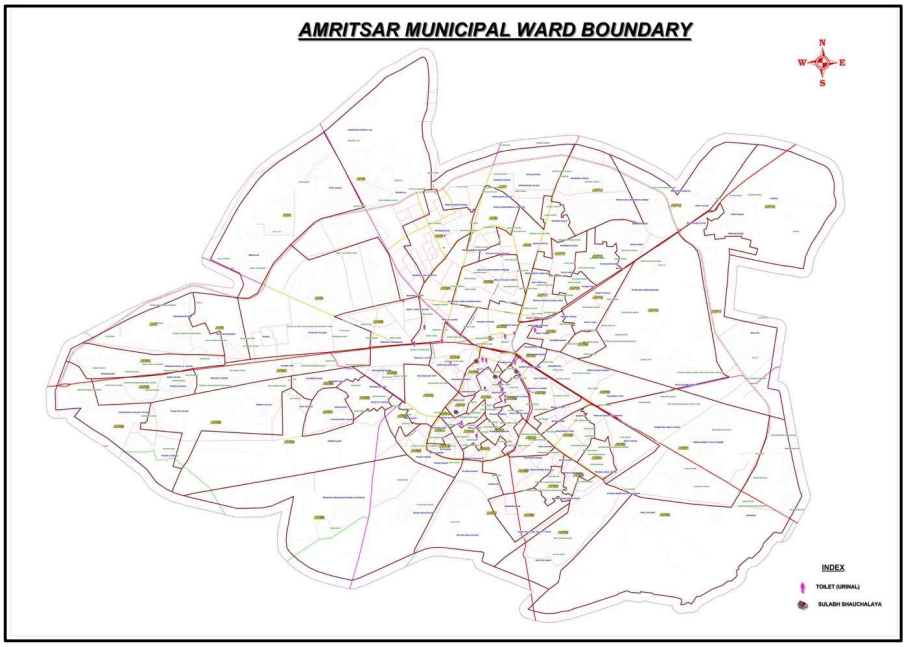
In addition, the pipeline system requires to cross at several locations the existing railway and highways. It also requires to be laid on the extreme shoulder of the highway within the city area. During the implementation and upon completion of full topographic survey of the city, the implementation consultant together with the contractor may explore other diversion routes for minimising the crossings and also to avoid permissions for laying along the shoulder of highways.

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 Municipal Area

Amritsar is home to Harmandir Sahib, popularly known as "the Golden Temple," one of Sikhism's most spiritually significant gurudwaras. The city has an area of about 210 Sq Km with a population of about 11 Lac according to the 2011 census. The city is fairly flat, gently sloping from north to east with an elevation of 233m MSL to about 226m MSL in the south

Figure 2.2: Ward Map of Amritsar



Water Demand

The historical population of the city has been used to estimate the future population and following assumptions on service levels are considered in estimating the water demand.

Table 2.6: Amritsar Historical Assumptions

Average consumption	150 LPCD
Transmission and distribution losses	20%
Daily tourist population	2 lac
Tourists staying overnight	30%
Demand for day visit tourists	40 LPCD
Demand for overnight staying tourists	200 LPCD
Non-domestic Demand	5%

Table 2.7: Amritsar estimated future population and water demand

Parameter	2019 (Current)	2025 (Base Year)	2040 (Intermediate Year)	2055 (Ultimate Year)

Population (in Lakhs)	13.15	14.51	18.15	22.11
Raw Water Demand (in MLD)		304	375	454
Treated Water Demand (in MLD)		289	356	431

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 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, former having capacity of 11,200 cusecs and latter 6,900 cusecs. 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. However, since an operator is allowed to design, build and operate, it is likely that the system will use best and modern technologies. 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 2.8: 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. 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 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 2.9: 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

Table 2.10: Amritsar Water Supply Improvements - Abstract Estimate

Amritsar - Abstract Estimate			US$1	70	INR
S.No	Component	Scope	Basis	Amount	
	Part A - Bulk infrastructure - Source to OHTs			Rs Crores	US$ million
1	Raw water drawl by Canal Authority	Job	Lumpsum	20.00	2.86
2	Land acquisition in Acres	Job	Lumpsum		
3	Raw water storage + pre-settling tank (Optional)	Job	Estimate	10.33	1.48
4	Raw water collection tank	Job	Estimate	0.16	0.02
5	Raw water pumping station	Job	Estimate	1.95	0.28
6	Raw water pumping machinery	Job	Estimate	14.56	2.08
7	WTP with quarters and boundary wall	Job	Estimate	176.00	25.14
8	Treated water collection tank	Job	Estimate	6.91	0.99
9	Subtotal common infrastructure				
10	Treated water pumping station	Job	Estimate	2.08	0.30
11	Treated Water Pumping Machinery	Job	Estimate	26.21	3.74
12	Transmission Pipeline System	Job	Estimate	223.52	31.93
13	Service storage	Job	Estimate	177.45	25.35
14	Subtotal of pumping, transmission and storage				
15	Subtotal - Bulk Infrastructure				
16	Contingencies		5%		
17	Total Cost				

2.5 Set Up Requirements common for both cities

Set up requirements are estimated covering topographical survey, customer survey, setting up hydraulic model, establishing customer service centres including all necessary software, hardware and furniture requirements. Provision is also made towards setting up an operating office, tools, plants for water loss control and effective maintenance of the networks.

Table 2.11: Component 2 Investment Costs (Construction and O&M)

Component 2: Water supply improvements		**Costs in $ millions**		
		Amritsar	Ludhiana	total
Water Production (Raw water and Treatment)	Raw Water Drawl	2.86	4.29	7.15
	Raw Water Storage	1.50	1.64	3.14
	Raw Water Pumping Station	0.28	0.43	0.71
	Raw Water Pumping Machinery	2.08	2.54	4.62
	Water Treatment Plant (440 MLD AMC; 580 LMC)	25.14	33.14	58.28
	Total	31.86	42.04	73.90
Clear Water Storage and Transmission Systems	Treated Water Collection tank	0.99	1.24	2.23
	Treated Water Pumping Station -North	0.15	0.17	0.32
	Treated water pumping machinery -North	1.82	1.67	3.49
	Transmission pipeline - North	15.34	22.78	38.12
	Service storage - North	10.74	12.92	23.66
	Treated Water Pumping Station -South	0.15	0.26	0.41
	Treated water pumping machinery -South	1.92	3.17	5.09
	Transmission pipeline - South	16.59	43.63	60.22
	Service storage - South	14.61	16.84	31.45
	Total	62.31	102.68	164.99
	Total Investment cost	94.17	144.72	238.89
	Contingencies 5%	4.71	7.24	11.94
Land Acquisition Cost		7.00	4.00	11.00
	Grand Total	105.88	155.96	261.83

Road Cutting and Restoration: Road cutting for pipeline laying has been proposed with 300mm minimum working space on both sides of pipe for sizes up to 500mm diameter and for higher sizes the working space is increased to 500mm on each side. Full road restoration to original standards of existing road are proposed as a first phase restoration for all pipelines including house connections to minimise inconvenience to the residents. However, once the usage of road is restricted to one side during pipeline construction on the opposite side, the high density of traffic would rapidly damage the used road portion and hence a permanent restoration of top layer for entire road becomes necessary. This total resurfacing of top layer needs to be taken up by the City Corporation as part of their periodical road maintenance program with separate funds.

3 ANALYSIS OF ALTERNATIVES

The Indian Regulations and World Bank ESS both require feasible project alternatives to be considered during the ESIA process to avoid and/or minimise adverse impacts on the biophysical and social environment. Ultimately, the preferred alternatives (i.e. location, technology, activity etc) should have the least environmental and social impacts and it must be clearly demonstrated that the preferred alternative performance level is consistent with the objectives of the ESSs and the applicable Environmental, Health and Safety Guidelines (EHSGs). The section below provides a description of the different alternatives considered during the feasibility phase and justification for selecting specific options.

3.1 Water Source Alternatives

Table 3.1: Proposed alternatives options considered for supplying the municipal area

Water supply alternative	Description	Assessment outcome
Spring-fed system	Construction and/ or upgrading of piped rural water systems using locally available springs to supply storage tanks for local distribution	This option was not feasible to supply the whole of the Urban Municipal Corporation area. This alternative was therefore not assessed further.
Existing Groundwater-abstraction	Existing system of piped water systems using locally available water abstracted by submersible pumps to header tanks for local distribution	This has led to rapid decline in groundwater levels (by 3 meters and 2.6 meters from 2014 to 2016 in Amritsar and Ludhiana, respectively), limited service delivery hours and coverage (12 hours/day in Amritsar 10 hours/day in Ludhiana in 2014), incomplete, deteriorating distribution networks that cater to tube well supply, high levels of non-revenue water (NRW, in excess of 60-65%), and poor cost recovery from user charges (around 30% due to flat tariffs and large scale exemptions) .
Abstraction of water from Canal	Construction of abstraction and water treatment systems to supply target settlements from perennial Canal flow	Improved water supply services through (i) establishment of city-based ring-fenced water and wastewater entities; (ii) improved design, construction, O&M of WTPs and distribution networks, delivery of services and collection of tariffs with the support of capable private sector operators; (iii) expansion of coverage and service delivery hours through investments in distribution networks, storage networks and WTPs that use surface water sources; (iv) reduction of NRW; etc

3.2 Without Project Alternative

The “without project” alternative serves as a basis for comparison and can serve to validate the need and desirability for the project. Therefore, as standard practice and to satisfy regulatory requirements, the option of not proceeding with the project is included in the evaluation of the alternatives. The “without project” alternative is defined in this ESIA as the option of no construction of the Water Supply Improvement Project. This implies that the objective to meet the water demands of Municipal Corporation area will not be achieved. Ultimately the mandate of ensuring access to a sustainable supply of potable water as per the provisions of the PUGWSIP will not be implemented.

The “Without project” alternative will have no impacts on the biophysical environment. However, further depletion in ground water resources will continue to occur which in itself would have larger detrimental environmental and social impacts.

4 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.

4.1 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 4.1.

Table 4.1: Applicable Environmental, Health, Safety and Social Regulation

S.N.	Act/Law	Agency Responsible	Requirement	Applicability
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.	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.	Not Applicable.
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	Applicable since minor to moderate air emission is expected from the project construction phase

S.N.	Act/Law	Agency Responsible	Requirement	Applicability
			then the penalty will be decided on the basis of the parent Air Act 1981.	
6	Noise (Regulation and Control) Rules 2000 amended in 2010	SPCB	The Rules stipulate ambient noise limits during day time and night time for 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.	Applicable since minor to moderate noise emission is expected from project activity 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, spent oils, lubes, will be used for the civil work involved. 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 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

S.N.	Act/Law	Agency Responsible	Requirement	Applicability
				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' (Regulation of Employment and Conditions of Service) Act 1996	Ministry of Labour and Employment, GoI	This Act provides for safety, health and welfare measures of buildings and 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.	Applicable during construction phase. Project proponent will ensure through its 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.

S.N.	Act/Law	Agency Responsible	Requirement	Applicability
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 Contract Labour (Regulation And Abolition), 1973	Labour Welfare Board, Punjab	The Contract Labour (Regulations & Abolition) Act, 1970 requires every principal employer of an establishment 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	Applicable. All vendors will be employed including contractors should have valid labour license. 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.

S.N.	Act/Law	Agency Responsible	Requirement	Applicability
			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.	
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 conditions of work for children, if permitted to work.	PIU should ensure that no child labour will be engaged at site for construction or operation works either directly or by the sub-contractors. 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	The project will need to comply with the requirement as stated in the law.

S.N.	Act/Law	Agency Responsible	Requirement	Applicability
			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.	
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.	Land for the project is being taken on Lease for 30 Years. Land will be returned to the land owners after lease duration. No purchase or acquisition of land is proposed for the project. Hence, It does not involve any involuntary displacement; therefore, LARR 2013 is not applicable for this 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	PIU will ensure that all grievances raised by locals related to the project are addressed through grievance redressal process. O&M contractor shall be

S.N.	Act/Law	Agency Responsible	Requirement	Applicability
			consent from the respective panchayat body/village administrative officer etc., during the project life cycle.	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.

4.2 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 4.2: World Bank's Environmental and Social Standards Applicable to PUGSWIP

ESS	ESS Objectives	Applicability to PUGWSIP (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: (a) Anticipate and avoid risks and impacts; (b) Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels; (c) Once risks and impacts have been minimized or reduced, mitigate; (d) 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	The ESS 1 is applicable to projects with environment and/or social risks and/or impacts. PUGSWIP 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	PIU to develop an Environmental & Social Management Framework (ESMF), **Environmental & Social Commitment Plan** (ESCP) and **Environmental and Social Management System** at the State & City level as well as adhere to the ESMP plan recommended for its PUGWSIP at the ground level. PIU is required to fulfil the following requirements: • Develop Environmental and social action plans as appropriate; • Identification of risks and impacts; • E&S Management program; • Strengthen organizational capacity and competency to manage E&S risks; • Training for security and safety workers; • Emergency preparedness and response; • Stakeholder engagement/ grievance redressal; and • Monitoring, reporting and review.

ESS	ESS Objectives	Applicability to PUGWSIP (Component 2)	ESMF compliance requirements
	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.	property/ roads & development of OHSR a Stakeholder Engagement Plan (**SEP)** needs to be developed and implemented as well as adequate 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	• To promote safety and health at work • To promote the fair treatment, non-discrimination and equal opportunity of project workers • 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	The ESS 2 applies to workers (construction & operation) directly engaged by the borrower (direct workers), 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	PIU should ensure that adequate facilities and amenities are provided in the labour camps for construction workers including: 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 monitor the condition of the

ESS	ESS Objectives	Applicability to PUGWSIP (Component 2)	ESMF compliance requirements
	primary supply workers, as appropriate. • To prevent the use of all forms of forced labor and child labor. • To support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law • To provide project workers with accessible means to raise workplace concerns	construction and operation phases. **ESS 2 is therefore relevant**	labour camps at all the mentioned project sites. The worker accommodation 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

ESS	ESS Objectives	Applicability to PUGWSIP (Component 2)	ESMF compliance requirements
			ESMS and the same will be implemented at 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 PUGWSIP 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. **ESS 3 is therefore relevant**	Downstream water allocation may be impacted. Water (construction) for project should be sourced & managed according to local permission & capacity. Safe drinking water will also be supplied to the workers. Impact on ambient air quality envisaged for this project during construction phase. However, the noise & air quality impacts would be temporary and manageable. PIU should implement measures during construction for management of construction debris generated during construction, trenching period and minimization of fugitive dust emissions. Further, PIU should ensure through its contractors that other wastes (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.

ESS	ESS Objectives	Applicability to PUGWSIP (Component 2)	ESMF compliance requirements
			No impact on quality of surface or groundwater resources is expected on account of the project. The sub-contractors should ensure that the water made available to workers and employees' meets national potable water quality norms. 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 operation phases should be provided.
		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.	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	This Standard is applicable to projects which entail potential risks and impacts 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	The Applicability will be both to the construction and operation phase at the WTP & OHSR sites. In addition to the movement of heavy machinery / vehicles during the construction phase. The Action Plan and any other relevant project-related information is to enable the influenced communities and relevant government agencies to understand

ESS	ESS Objectives	Applicability to PUGWSIP (Component 2)	ESMF compliance requirements
	change, in the design and construction of infrastructure, including dams • To avoid or minimize community exposure to project-related traffic and road safety risks, 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	communities. Impacts due Electrocution and Firing due to short-circuit, Accidents during 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**	these risks and impacts and will engage the influenced communities and agencies on an on-going basis consistent with the requirements of the ESS. The potential occupational hazards arising from the project activities and the impacts on health & safety of the affected community needs to be identified and assessed An occupation health safety plan needs to be formulated. All steps to reduce the impact on the health and safety of the community to minimal will be taken. 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	Land required for WTP facility. Hawkers & Squatters to be impact during transmission line construction. Adjacent land parcels during construction may provide restriction. Road access.	It was informed, that lands for the WTP has been identified for Amritsar, whereas for Ludhiana land and not been identified for voluntary acquisition. . Temporary restrictions in movement due to laying of water transmission mains.

ESS	ESS Objectives	Applicability to PUGWSIP (Component 2)	ESMF compliance requirements
	• 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 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	Livelihood of temporary roadside vendors. **The ESS 5 is therefore relevant**	Vendors, Squatters, Encroachers will be displaced and/or livelihood impacted PIU should develop their own **Environment & Social Management System** (ESMS). A **GRM Policy** should 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. 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	ESS Objectives	Applicability to PUGWSIP (Component 2)	ESMF compliance requirements
	implemented with appropriate dis-closure of information, meaningful consultation, and the informed participation of those affected		
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.	No forest area is in the 5 km study area around the project site. The WTP project area is part of agricultural (modified ecosystem) with similar land use all around. No schedule -I species according to Wildlife Protection act, 1972 is reported from the project site. Ecology of canal water at intake point may be impacted. Urban areas, parks housing the OHSR accommodate fauna, including birds, rodents, reptiles. Disturbance during construction is anticipated. **The ESS -6 is therefore relevant**	Following actions are required to be taken • Activities generating high noise shall be restricted to daytime and will be mitigated to minimize the noise level outside the site area. • General awareness regarding wildlife shall be enhanced through trainings, posters, etc. among the staff and labourers. • Strict prohibition shall be implemented on trapping, hunting or injuring wildlife within subcontractors and shall bring a penalty clause under contractual agreements. • Camp and kitchen waste shall be collected in a manner that it does not attract wild animals. • The footprints of the construction activities shall be kept to minimum to reduce disturbance to flora and fauna.
ESS 7: Indigenous People/ Sub Saharan African Historically Underserved	• To ensure that the development process fosters full respect for the human rights, dignity, aspirations, identity, culture, and natural	Neither Amritsar, nor Ludhiana have a significant population of indigenous people. The project area or parts thereof	

ESS	ESS Objectives	Applicability to PUGWSIP (Component 2)	ESMF compliance requirements
Traditional Local Communities	resource- based livelihoods of Indigenous Peoples/ Sub-Saharan African 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	also do not fall in any notified Tribal Zone. Therefore, **ESS 7 not applicable for this project.**	

ESS	ESS Objectives	Applicability to PUGWSIP (Component 2)	ESMF compliance requirements
	• 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 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 development • To promote meaningful consultation with stake- holders regarding cultural heritage	This ESS 8 is applicable 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.	**Chance find Procedure** could be formulated under ESS 8 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	ESS Objectives	Applicability to PUGWSIP (Component 2)	ESMF compliance requirements
	• To promote the equitable sharing of benefits from the use of cultural heritage	**Therefore ESS 8 is relevant**	
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 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	The PUGWSIP 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 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.	**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 and address the concerns. Project Grievance Mechanism by addressing ES performance feedbacks by formal 7 informal process. Grievance redress system development – support task team, single entry point at the corporate level. Inspection panel – independent complain mechanism for people & community -

ESS	ESS Objectives	Applicability to PUGWSIP (Component 2)	ESMF compliance requirements
	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.	**The ESS 10 is therefore relevant**	impacts or likely to be impacted by project.

4.2 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.

Table 4.3: 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), µg/m^3	Annual* 24 hours**	50 80	20 80
Nitrogen Dioxide (NO_2), µg/m^3	Annual* 24 hours**	40 80	30 80
Particulate Matter (size less than 10 µm) or PM_{10} µg/m^3	Annual* 24 hours**	60 100	60 100
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$ µg/m^3	Annual* 24 hours**	40 60	40 60
Ozone (O_3) µg/m^3	8 hours* 1 hour**	100 180	100 180
Lead (Pb) µg/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) µg/m^3	Annual* 24 hours**	100 400	100 400
Benzene (C_6H_6) µg/m^3	Annual*	5	5

Pollutant	Time Weighted Average	Concentration in Ambient Air	
		Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (notified by Central Government)
Benzo(a)Pyrene (BaP)- particulate phase only, ng/m^3	Annual*	1	1
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.

Table 4.4: 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

Table 4.5: 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.

Table 4.6: Guidelines for Evaluation of Irrigation Water Quality

Water class	Sodium (Na) %	Electrical conductivity (mS/cm)	SAR	RSC meq/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

Table 4.7: 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.
    a. *dB (A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.
    b. A "decibel" is a unit in which noise is measured.
    c. "A" in dB (A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

4.4 Applicable International Agreement and Conventions

India is a party to various international agreements and conventions related to environment.

- I**nternational Union for Conservation of Nature and Natural Resources (IUCN).** The IUCN Red List of Threatened Species (also known as the IUCN Red List or Red Data List), founded in 1963, is a comprehensive inventory of the global conservation status of plant and animal species. The IUCN is an authority on the conservation status of species. A series of Regional Red Lists are produced by countries or organizations, which assess the risk of extinction to species within a political management unit. The aim is to convey the urgency of conservation issues to the public and policy makers, as well as help the international community to try to reduce species extinction.

- **Convention on Migratory Species of Wild Animals (CMS**). CMS was adopted in 1979 and entered into force on 1 November 1983. CMS, also known as the Bonn Convention, recognizes that states must be the protectors of migratory species that live within or pass through their national jurisdictions, and

aims to conserve terrestrial, marine and avian migratory species throughout their ranges. CMS Parties strive towards strictly protecting these species, conserving or restoring the places where they live, mitigating obstacles to migration and controlling other factors that might endanger them.

- **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES**). It is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. CITES were first formed, in the 1960s. Levels of exploitation of some animal and plant species are high and the trade in them, together with other factors, such as habitat loss, is capable of heavily depleting their populations and even bringing some species close to extinction. Because the trade in wild animals and plants crosses borders between countries, the effort to regulate it requires international cooperation to standard certain species from over- exploitation.

- **Ramsar Convention on Wetlands of International Importance, 1971**. The Convention on Wetlands of International Importance, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The Ramsar Convention is an international treaty for the conservation and sustainable utilization of wetlands The Ramsar Convention is the only global environmental treaty that deals with a particular ecosystem. According to the Ramsar list of Wetlands of International Importance, there are 25 designated wetlands in India which are required to be protected. Activities undertaken in the proximity of Ramsar wetlands shall follow the guidelines of the convention.

- **Convention on the Transboundary Movements of Hazardous Wastes and Their Disposal, 1989**. Convention to protect human health and the environment against the adverse effects of hazardous wastes. This aims at (i) reduction of hazardous waste generation, promotion of environmentally sound management (ii) restriction of transboundary movements, and (iii) a regulatory system for transboundary movements.

- **UN Convention to Combat Desertification (CCD):-** Signed in 1994 and entered into force in 1996, this convention aims to combat the desertification and mitigate the effects of drought through national action programs that incorporate long-term strategies supported by international cooperation and partnership arrangements. As an impact of this treaty, the year 2006 was declared as "International Year of Deserts and Desertification" to spread awareness about the desert areas of the world and especially the problem of desertification.

- **The Convention on Biological Diversity. Commonly referred to as the Biodiversity Treaty, 1992**, defines biodiversity as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems." Parties to the Biodiversity Treaty "affirm sovereign rights over the biological resources found within their countries, while accepting responsibility for conserving biological diversity and using biological resources in a sustainable manner".

- **United Nations Framework Convention for Climate Change**. The UNFCCC objective is to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. India signed the UNFCCC in 1992 and ratified in 1993. The framework set no binding limits on greenhouse gas emissions for individual countries and contains no enforcement mechanisms. Instead, the framework outlines how specific international

treaties (called "protocols" or "Agreements") may be negotiated to set binding limits on greenhouse gases. The Ministry of Environment and Forests is the nodal agency for climate change issues in India.

- **The Kyoto Protocol** to the UNFCCC was adopted in 1997 that commits State Parties to reduce greenhouse gas emissions, based on the premise that (a) global warming exists and (b) human-made CO2 emissions have caused it. Developed countries and economies in transition listed in Annex B of the Protocol, to reduce their GHG emissions by an average of 5.2% below 1990 levels. Article 12 of the Kyoto Protocol provides for the Clean Development Mechanism (CDM). India acceded to the Kyoto Protocol in 2002. India has taken various initiatives to improve understanding of climate change, and comply with the requirements of the UNFCCC.

- **Paris Agreement**. The Paris Agreement to the UNFCCC deals with greenhouse gases emissions mitigation, adaptation and finance starting in the year 2020. The contribution that each individual country should make in order to achieve the worldwide goal are determined by all countries individually and called "nationally determined contributions" (NDCs). India signed convention in April 2016 and ratified in October 2016.

Except the treaties related to climate change (e.g. UNFCCC), none of the above agreements are linked to project development or operation due to the nature and location of PUGWSIP. In compliance with the requirement of UNFCCC, PUGWSIP will be designed, constructed and operated with consideration to reduction in greenhouse gas (GHG) emissions and that all infrastructure be built as climate resilient.

5 ENVIRONMENTAL AND SOCIAL BASELINE

As a precursor for the prediction of 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 is to be generated through primary data collection (direct monitoring) and secondary sources (published data).

Urbanizing Behaviour of Ludhiana and Amritsar

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.

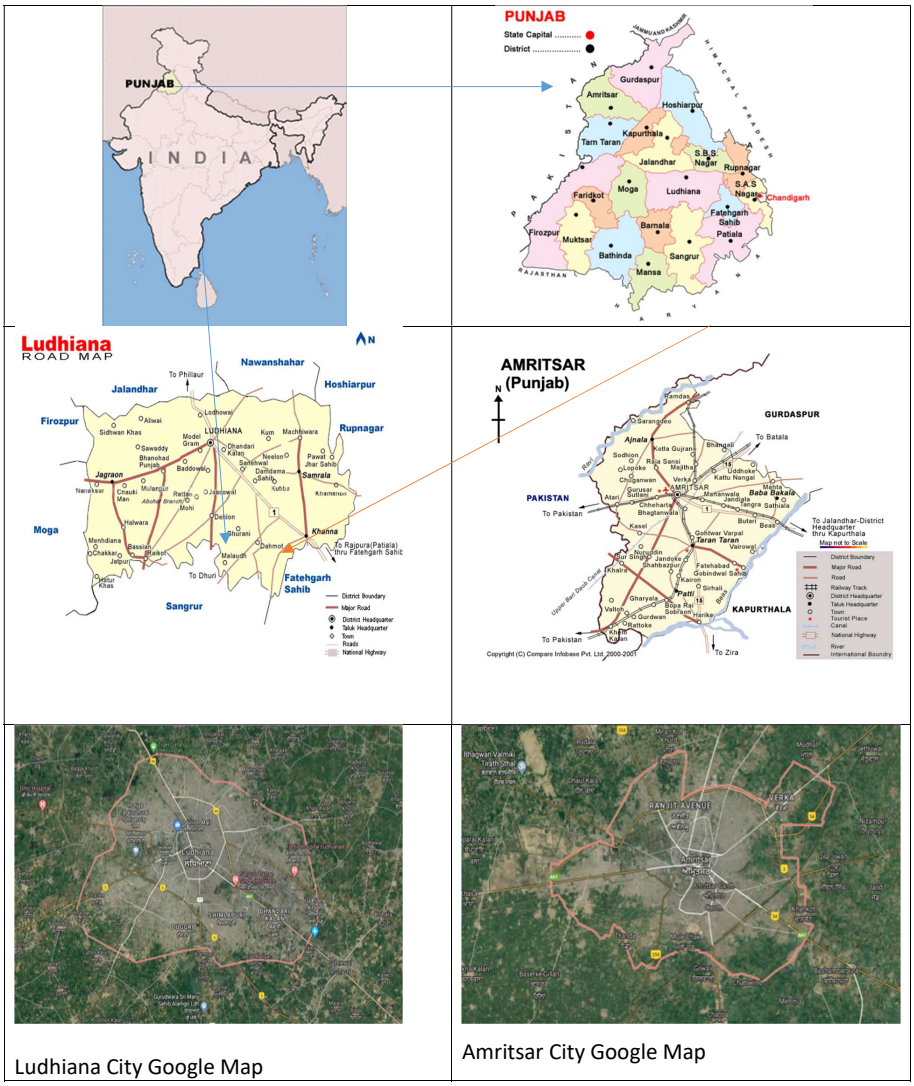
The Amritsar city has shown negative growth of industry during 1995- 2009 phases. There are quite fluctuating growth trends as compared to previous years. Ludhiana has the highest urban growth rate of 71.77 per cent in the year 1991, which is reduced to 34.11 per cent in year 2001. There is steady rise 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 (Fig 5.2). 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)

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 %



Ludhiana City Google Map

Amritsar City Google Map

Figure 5.1: Map showing the study area and participating cities of Ludhiana and Amritsar

5.1 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.

5.1.1 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.

5.1.2 Air quality

- The compiled emissions inventory for the Ludhiana region for the following pollutants – sulfur dioxide (SO2), nitrogen oxides (NOx), carbon monoxide (CO), non-methane volatile organic compounds (NMVOCs), carbon dioxide (CO2); and particulate matter (PM) in four bins (a) coarse PM with size fraction between 2.5 and 10 µm (b) fine PM with size fraction less than 2.5 µm (c) black carbon (BC) and (d) organic carbon (OC), for year 2015 and projected to 2030.
- The city has an estimated 41% of the ambient annual PM2.5 pollution (in 2015) originating outside the urban airshed, which strongly suggests that air pollution control policies need a regional outlook, including trans-political boundary. This mostly stems from coal-fired power plants, industries including brick kilns, open field burning emissions during the harvest seasons, and a strong influence of meteorology
- Stricter emission standards at the coal-fired thermal power plants in the region will help reduce the share of outside contributions
- The city needs to aggressively promote public transport as part of the city's urban development plan, along with the improvement of the road infrastructure to reduce on-road dust re-suspension. The non-motorized transport can play a critical role, given the presence of increasingly large number of short-term visitors every year

- By 2030, the share of emissions from residential cooking and lighting is expected to decrease with a greater share of LPG, residential electrification, and increasing urbanization. However, biomass and coal burning to provide warmth in the winter will still be an issue
- By 2030, the vehicle exhaust emissions are expected to remain constant, if and only if, Bharat 6 fuel standards are introduced nationally in 2020, as recommended by the Auto Fuel Policy
- The small and the medium industry, largely textiles and light engineering need an energy efficiency management plan to address the emissions from coal, heavy fuel oil, and gas combustion or shift towards using electricity
- About 200 brick kilns in this urban airshed (and more outside) are fueled mostly by coal and agri-waste, can benefit from technology upgrade from the current fixed chimney to (for example) zig-zag, in order to improve the overall energy efficiency of the kilns
- Open waste burning is dispersed across the city and requires stricter regulations for addressing the issue, as the city generates ever more garbage, with limited capacity to sort and dispose of it.

5.1.3 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.

- The first aquifer generally occurs between 10 and 30m.
- The second is between 50 and 120m.
- Third between 150-175m.
- 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.

5.1.4 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).

5.1.5 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, depletion of groundwater level and cancer epidemic 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 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. Even such birds and animals as were found in abundance in the district some 40-50 years ago may, therefore, be said to have greatly diminished during the last few decades. Sport or small game in a very restricted form is available along the riverbank or in certain areas which

have not been cultivated on account of the seasonal overflow of water from the river. Such stretches of land are covered with thick growth of reeds and bushes. Only such wildlife is possible in these areas, which may be considered comparatively safe for birds and animals, as can subsist there. In the cold weather, wild fowl (*Kulan*) are seen. In the uplands, good many hares and small game, such as partridges black and grey are found in sugarcane fields and small patches of jungle. Quails are plentiful in their seasons. Various types of sand grouse may be met with in cold weather amongst fields of Moth, etc. wild pigeon is found all over the countryside. Peacocks are a common sight in all parts of the district and may be seen both in the fields and on house tops. Their number has generally remained steady because the bird is not killed for game by overwhelming numbers of the people. In some of the detached villages, which still have some growth of jungle left, it is possible to get good bag of small game. The Birs or forest plantations which served as game preserves have also shrunk in size. The wild boars, which were a menace to the villages, have also gone down in numbers as a result of the rapid increase in population and very limited areas left uncultivated. The antelope and ravine deer which were quite common a few years ago are fast disappearing. Even otherwise shooting wild game in the open country, when very large numbers of people are always working in the fields, is not free from risk.

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.

5.1.6 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 8: Demographic Profile of Ludhiana

Sr. No.	Indicators	Ludhiana Municipal Corporation
1	Total Population	1618879
2	Share of ULB population in District 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 9: 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 10: 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.

5.2 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.

5.2.1 Ambient Air quality

Present below a summary of the ambient monitoring data available under the National Ambient Monitoring Program (NAMP), operated and maintained by the Central Pollution Control Board (CPCB, New Delhi, India). In Amritsar, there is 1 continuous air monitoring station (CAMS) reporting data for all the criteria pollutants and 3 manual stations reporting data on PM10, 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. Real time continuous monitoring of CPCB is located in Golden Temple Complex.

- Modelled urban average ambient PM2.5 concentration is 83.4 ± 8.3 µg/m3 – more than 2 times the national standard (40) and more than 8 times the WHO guideline
- The city requires at least 18 continuous air monitoring stations to statistically, spatially, and temporally, represent the mix of sources and range of pollution in the city (current status – 3 manual and 1 continuous)
- The city has an estimated 53% of the ambient annual PM2.5 pollution (in 2015) originating outside the urban airshed, which strongly suggests that air pollution control policies need a regional outlook, including trans-political boundary.
- Stricter emission standards at the coal-fired thermal power plants in the region will help reduce the share of outside contributions
- The city needs to aggressively promote public transport as part of the city's urban development plan, along with the improvement of the road infrastructure to reduce on-road dust re-suspension. The non-motorized transport can play a critical role, given the presence of increasingly large number of short-term visitors every year
- By 2030, the share of emissions from residential cooking and lighting is expected to decrease with a greater share of LPG, residential electrification, and increasing urbanization. However, biomass and coal burning to provide warmth in the winter will still be an issue
- By 2030, the vehicle exhaust emissions are expected to remain constant, if and only if, Bharat 6 fuel standards are introduced nationally in 2020, as recommended by the Auto Fuel Policy
- The small and the medium industry, largely textiles and light engineering need an energy efficiency management plan to address the emissions from coal, heavy fuel oil, and gas combustion or shift towards using electricity
- About 110 brick kilns in this urban airshed are fueled mostly by coal and agri-waste, can benefit from technology upgrade from the current fixed chimney to (for example) zig-zag, in order to improve the overall energy efficiency of the kilns
- Open waste burning is dispersed across the city and requires stricter regulations for addressing the issue, as the city generates ever more garbage, with limited capacity to sort and dispose of it.

5.2.2 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.

5.2.3 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 %.

5.2.4 Biodiversity

As per Punjab Forest Department about 6% area of Punjab is under forests. This is because as the department also includes tree cover around road and rail lines under the Forest cover. 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.

5.2.5 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 11: 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.

6 ASSESSMENT OF POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

6.1 Positive Impacts of PUGWSIP

The PUGWSIP will bring significant benefits to the local population and the cities of Ludhiana & Amritsar l. The major positive impacts of the project are listed below:

1. Supply of clean drinking household water, thus reducing risk to diseases,.
2. Generation of employment during all phase of the project for skilled and unskilled locals and adjoining area
3. Improve the existing environment of the area, beautification of the OHSR location.
4. Better health, potable water for the local population by shifting from highly contaminated ground water to surface water.
5. Improved common urban infrastructure
6. Reduced usage of ground water avoiding further deterioration of ground water.

6.2 Negative Environmental and Social Impacts of PUGWSIP

In line with the positives, the PUGWSIP project activities are likely to cause adverse impacts as well, including:

1. Generation of Construction materials and aggregate materials solid waste– during construction of WTP
2. Impact on community health due to air pollutant and noise emission
3. Disruption of Traffic
4. Damage to cultural assets and heritage
5. Transmission line trenching – Impact traffic, ROW, visual aesthetics, health-safety, adjacent land use impacted, storage of top soil – may disperse by wind or runoff during monsoon.
6. During Construction – Creating of temporary workers camps will cause issues of hygiene and disease transmission both by vectors and water.
7. Impact on local ecology and biodiversity
8. Land acquisition
9. Gender based violence and impact on vulnerable groups
10. Involuntary resettlement and impact on livelihood
11. Land use & adjacent land parcels will be affected.
12. OSHR development – Demolition & construction impacts- health & safety, Dust & Noise, hazardous storage,
13. Increase in traffic load by congestion in roads, fatality, mortality, increase in auto emissions and noise
14. Possible risk to structures as both Ludhiana & Amritsar falls in the Zone IV Seismic activity, i.e. high vulnerability.
15. Flood is another threat that may risk the project systems
16. Sludge/sediment production during WTPs operations

The major potential environmental impacts have been identified for each project components and are summarized below in line with the World Banks ESS. While the full range of potential environmental and social impacts and mitigation are provided in Annexure

Table 6.1: Potential Major Environmental and Social Risks and Suggested Mitigation Measures

ESS	World Banks Environmental and Social Standards	Impacts	Mitigation Measure	Instruments applicable
1	Assessment and Management of Environmental and Social Risks and Impacts	▪ 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 ▪ The PUGWSIP Component 2 is likely to cause high environmental and social risk during construction	▪ To 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 ▪ Develop monitoring plan and audits ▪ Institutional responsibility and capability building	▪ ESMF ▪ ESIA ▪ ESCP ▪ ESMP
2	Labour and Working Conditions	▪ Staff handling and use of hazardous waste exposed the workers to occupational health risks. ▪ Influx of migrant labours, communicable diseases ▪ Gender based violence ▪ Conflict with local community ▪ Conflict of locals with security at site	▪ Workers should be equipped with appropriate Protective Personal Equipment ▪ There should be a first aid kit at all times on each site ▪ Health screening during induction; Regular training & awareness ▪ Clear markings and signage should be used in all areas of the site ▪ All waste storage and disposal sites to be adequately condoned off from the public ▪ Gender analysis, Grievance mechanism, labour management plan	▪ LMP

3	Resource Efficiency & Pollution Prevention and Management	▪ Air pollution may arise from the indiscriminate open air burning during site clearance. ▪ Air pollution could also occur from using diesel powered generator sets and vehicles with poor or high emission rates. All these activities would negatively affect air quality. ▪ Dust & emission due to increase in traffic & congestions at Transmission line sites ▪ Noise increase due to transport & machinery ▪ Improper waste management could lead to leachate produced flowing into surface waters and contamination could occurs ▪ Upstream pesticide usage in agriculture in find its way into supply water downstream ▪ There is an expected increase in waste generated from both WTP, OHSR development & transmission line laying. ▪ Waste generated on site if not managed properly could accumulate and become unpleasant sights to the area. ▪ Waste dumped besides roads may intrude onto the roads causing vehicular hold ups and accidents. ▪ Reduced visual aesthetics	▪ Indiscriminate burning of wastes at site should be avoided to reduce air pollution. ▪ Waste should be evacuated at least once a week ▪ All waste should be directed to an approved storage and dumpsite. ▪ Public awareness and information about upcoming work ▪ Maintained vehicles with PUC certified ▪ Working during day time to reduce impact of noise ▪ Waste must be collected and segregated at each point of generation ▪ Waste must be stored in appropriate bags/containers ▪ Analysis & monitoring of intake water, upstream & downstream canal water ▪ Ensure proper handling, and disposal of wastes ▪ Waste must be stored temporarily in designated areas daily ▪ Waste should be evacuated weekly ▪ Hazardous waste management plan to be in place and should be prepared in accordance with the National Laws & standards.	▪ EMP?

4	Community Health and Safety	▪ Road safety during supply line construction ▪ Traffic congestion ▪ Increased traffic due to movement of materials, equipment's, etc ▪ OHSR - demolition accidents, debris, dust & noise ▪ Impact on aesthetics ▪ Accidents at construction sites ▪ Being in Seismic Zone 4, the cities are vulnerable to Earthquake risk ▪ Flooding may also be a risk	▪ Waste generated on-site should be evacuated at least once a week ▪ Hazardous Waste should be stored inside impermeable containers container ▪ Controlled demolition ▪ Traffic management ▪ Prohibition of access to the construction sites by any person having no work permits. ▪ Proposed site should be clearly marked and cordoned off any access by the public ▪ WTP structures to be earthquake resistance ▪ WTP structures to be above HFL level ▪ OHSR to be earthquake resistance structure	▪ Traffic Management Plan
5	ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	▪ Required for WTP ▪ Borrowing & trenching may impact local community, common property, roads ▪ Squatters, Encroaches impacted on livelihood ▪ Damage to building & infrastructure, roads, common property during pipeline laying	▪ Stakeholders Engagement ▪ Identification of project affected persons, interested parties, Vulnerable groups ▪ Public Consultations – feedbacks, disclosure, GRM, address E&S performance grievances by formal & informal process; Inspection panel ▪ Prior informed on all activities ▪ No forced eviction, best alternatives to involuntary resettlements	▪ RPF ▪ RAP ▪ SEP? ▪ Project GRM?
6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	▪ Impact on aquatic ecology during intake point construction and operation ▪ WTP will change land use from agricultural to built-up – soil ecology of site to be impacted ▪ Laying of pipeline may damage trees, greenery patches and common property of high environmental value ▪ OHSR development will impact avian and other small mammals, especially in the parks.	▪ Avoid or minimal disturbance to ecology ▪ Waste dumps, spoils, must not runoff to canals or other water bodies ▪ General awareness regarding wildlife shall be enhanced through trainings, posters, etc. among the staff and labourers. ▪ Strict prohibition shall be implemented on trapping, hunting or injuring wildlife within subcontractors and shall bring a penalty clause under contractual agreements. ▪ Camp and kitchen waste shall be collected in a manner that it does not attract wild animals.	▪ EMP?

			▪ The footprints of the construction activities shall be kept to minimum to reduce disturbance to flora and fauna. ▪ Minimal damage in parks, covered working areas, noise & vibration to be kept minimum and during day time only	
7	Indigenous People/ Sub Saharan African Historically Underserved Traditional Local Communities	▪ NA	▪	▪ N.A.
8	Cultural Heritage	▪ Chance finding of artefacts, structures, sacred places ▪ Earthwork impact on structures ▪ Pipeline laying may damage, weaken structures	▪ Chance finding to be reported ▪ Avoidance/Minimal damage to structures	▪ EMP?
9	Financial Intermediaries	▪ NA	▪	▪ N.A.
10	Stakeholders Engagement and Information Disclosure	▪ The PUGWSIP will include the construction of WTP, laying of water transmission lines and development of OHSR and will immensely benefit the local population and in the same time expose them to significate negative environment & social risks during the construction & implementation phase. ▪ As such, in order to have prior, informed social approval and mitigate the social implications stakeholder engagement, consultation, feedback is required	• Identification of project affected persons, interested parties, Vulnerable groups will be engaged, informed, record their views, suggestions & grievance and address the concerns. • Project Grievance Mechanism by formal and informal process and Grievance redress system Inspection panel	▪ SEP ▪ GRM

7 FRAMEWORK PROCEDURES FOR ENVIRONMENTAL AND SOCIAL MANAGEMENT (ESMP-F)

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.

7.1 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.

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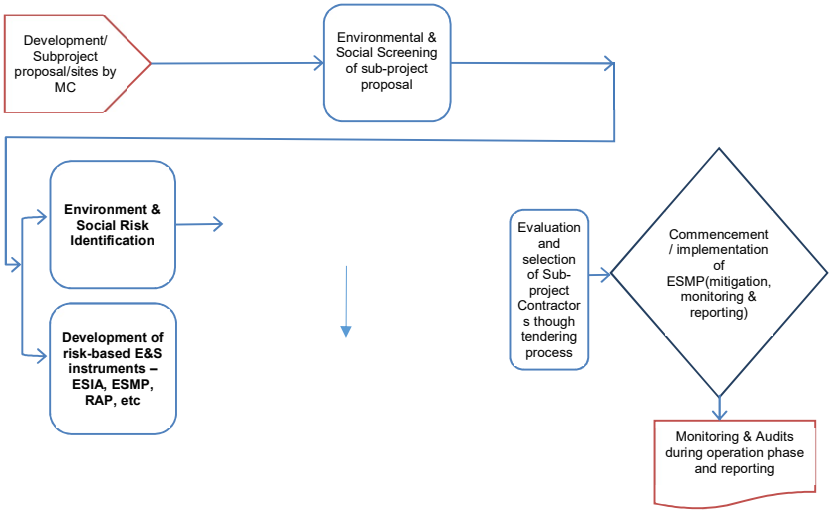


Figure 7.1: Environmental and Social Management Procedure

7.1.1 Sub project Screening and Categorization

All sub-project including the OHSR 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**. The scale of subproject activities is relatively moderate to high, although the anticipated impact is not expected to be very unprecedented, diverse or complex. The impacts can be managed locally using environmental and social mitigation plan. Therefore, Component 2 subproject activities may have the potential to cause environmental and social impacts.

7.2 Approach to Categorization of Sub-Projects

As part of its review of a project's expected social and environmental impacts, World Bank uses a system of social and environmental categorization and also capacity of implementing agency. This categorization is used to reflect the size of impacts understood because of the client's social and environmental assessment and to specify World Bank's institutional requirements. Environmental and social risk classification takes into account relevant potential risks and impacts, such as:

- the type, location, sensitivity and scale of the Project including the physical considerations of the Project;
- 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;
- 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;
- 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. PUGWSIP sub-projects will be categorized as: High, Substantial, Moderate or Low based on ESSs of WB and as per National Regulation categories as: Red, Orange, Green, White. 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. Borrowers – Low ESS capability
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. Borrowers – Moderate ESS capability

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. Borrowers – High ESS capability
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. Borrowers – Significant ESS capability

The Bank will review the risk classification assigned to the project on a regular basis, including during implementation, and the IA in consultation with the Bank, will change the classification where necessary, to ensure that it continues to be appropriate. Any change to the classification will be disclosed on the Bank's website.

If the result of environmental and social screening fulfills all requirements, the process is moved forward with environmental assessment which can be completed with preparing environmental mitigation plans. Subsequently, it is required to carry out environmental and social assessment 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.

7.2.1 Procedure for Impact assessment of sub-project activities

There are potential environmental & social impacts due to sub-project activity during construction phase. During the construction phase, the impacts may be regarded as temporary or short-term ranging from 6-12 months. Primary impacts are assessed for the site. The project has overall positive impacts by providing and improving supplied water to the households. It will certainly meet the ever-increasing demand of water that will bridge the gap between demand and supply.

7.2.2 Risk Significance Evaluation Matrix

Significance evaluation matrix as shown in Table 7.1. 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 7.1: Phase wise Procedures for different Risk categories of Sub-Projects

Sub-Project Phase	Procedures			Responsibility
	High and Substantial Risk Sub-Projects	Moderate Risk Sub-Projects	Low Risk Sub Projects	
Project Identification / Pre-Feasibility	Social and Environmental Screening of sub-project (Annex)	Social and Environmental Screening of sub-project (Annex)	Social and Environmental Screening of sub-project (Annex G and H)	PMIDC, PMU, PIU, MC

Sub-Project Phase	Procedures			Responsibility
	High and Substantial Risk Sub-Projects	Moderate Risk Sub-Projects	Low Risk Sub Projects	
	Consultations with key stakeholders (as per SEP)		Consultations with key stakeholders (as per SEP)	PMU, PIU, MC
	Preparation of ToR for ESIA (outline provided in Annex)		Prepare preliminary ESMP (outline provided in Annex)	Prepared by PMIDC, 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, reviewed an cleared by WB
	Public consultations (as per SEP)	Public consultations (as per SEP)	Review and modify ECOPs (provided in Annex)	PMU, PIU, MC
	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	PMIDC, PMU, MC
	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	PMIDC, PMU, MC

Sub-Project Phase	Procedures			Responsibility
	High and Substantial Risk Sub-Projects	Moderate Risk Sub-Projects	Low Risk Sub Projects	
Construction Works	Implement and monitor ESMP	Implement and monitor ESMP	Implement and monitor ESMP	PMIDC, MC, PMC
	Update ESIA (and ESMP) as required	Update IEE (and ESMP) as required	Update ESMP as required	PMIDC, MC, independent consultant
Post-Construction	Environmental Audit	Environmental Audit	Environmental Audit	PMIDC, third party

Country regulation compliance

The legislations relevant for environmental impact assessment for proposed investments and sub-projects are the listed in the 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 & SPCB. It is the responsibility of the PMIDC as a proponent to conduct an IEE/EIA of sub-projects, if required, the responsibility to review EIAs for the purpose of issuing Environmental Clearance Certificate rests with MOEFCC.

7.3 Monitoring and Reporting Procedures

Table 7.2: Typical Environmental and Social Framework Management Plan for PUGWSIP (Component 2)

Project Activity	Predicted Environmental Impact	Proposed Mitigation	Institutional Responsibility	Monitoring Duration (Start-End)	Indicator Parameter	Frequency of monitoring	Location	Record Keeping
Project Phase: Construction								
Site Clearance (clearing of the site so that it becomes accessible for further works)	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 activities	Site Clearance Area (m2)	During each phase of the project	Project Area	Daily logbook stating clearance done
	Vegetation loss (mainly grass/shrubs but also possibly some trees) in Transmission line route & OHSR sites	Preserve trees, if present, as far as practicable	Primary: Construction I/C Secondary: Planners		Vegetation Loss Area (m2)	During phases of the project requiring clearance of vegetation	Project sites	Map and list of trees and vegetation at the site prior to 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	Water sprinkling Compaction of soil	Primary: EHS Supervisor		Air: PM2.5, PM10, PM2.5, SO2,	Air:	Air: 100 m from the edge of	Keeping record water quantity

	dust emissions from debris stockpiles	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	Secondary: Construction I/C		NOX and CO	Once a week for 48 hours continuously	the clearance area	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	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

		capacity optimise number of trips						
	Water pollution (of the canal) due to intake point site clearance activities	Suitably manage the solid wastes, debris generated as per regulatory requirements	Contractor		SS, pH, TDS, COD, BOD, Chloride, Sulphates, O & G	Water Pollution: Once in a week	Water: At the intake project site wherever the works are going on	Water quality records
Intake Point Development in Canal	Aquatic and canal bottom impact	Construction of temporary separation/isolation walls will reduce impact. Preserve as much natural ecosystems as possible	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	Congestion and risk of accidents due to increase in vehicles and	Stage delivery of required materials and equipment Store all construction	Primary: EHS Supervisor Secondary: Construction I/C	From commencement of transportation till end				Trained staff for traffic management and control

Equipment and Materials	machines, and traffic	equipment and materials at "off road" sites Post signs along the roads Move heavy machines only early mornings and late evenings						
	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	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

		except iron rods, pipes, steel 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	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

	and may deteriorate soil Pollution on adjacent land parcels							
	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 the project site wherever the works are going on	By keeping record of Surface Water analysis result
	Air Pollution due to vehicular movement, and dust emissions	Water sprinkling Ensure well maintained equipment's 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 optimise number of trips Dry and dusty materials stored in sealed containers	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

		or prevented from blowing Material will be covered during transportation except steel, iron, pipes, etc Traffic controlled by trained staff						
	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	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 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,	Contactor					Record of incidents

		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						
	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	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 and outlet discharge	Water sample analysis result

		the construction phase to supply water for construction. Provide suitable sanitation facilities to all 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					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, construction/solid waste management	The solid waste/debris will be segregated The recyclable waste will be sold off to authorized recyclers and the biodegradable waste, if any, will be collected and	Local administration		Exchange Sodium Percentage, Electric Conductivity			By keeping record of solid waste segregation and disposal. Soil data

		disposed as per local norms						
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, etc 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 Administration & Construction I/C	Regular checking and taking feedback from local community		Regular inspection	Site & surrounding	Feedback & Grievance records
Incomplete removal of Project/	Risk of soil, water, waste impacts from residuals	Clean-up of all worksites/work	Contactor			Site Inspections		

construction materials	left after project completion	camps after project completion						
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
	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

7.3.1 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 Expert shall monitor the site on a biweekly/monthly basis during civil works, depending on the sub-project scope. More frequent monitoring may be conducted if needed to ensure compliance with the mitigation measures and resolution of any issues that are noted.

7.3.2 Compliance Reporting

7.3.2.1 Monthly Compliance Reports

Contractor EHSS Officers shall prepare and submit a monthly compliance report to supervisory consultant, project proponent and the PIU/MC Environmental and Social Expert to document construction and compliance activities completed during the month, and to track the resolution of any issues that may have occurred. The reports should include the following information for the period:

- Summary of completed construction activities
- Estimate of remaining construction and schedule
- Summary of compliance activities
- Updated list of all EHSS incidents that occurred during the project
- Follow up information from any past issues that are still being resolved
- Photographs of project activities related to implementation of ESMP mitigation measures
- Daily compliance checklist each day that work occurs in the field.

7.3.2.2 Biannual Compliance Reports

The PIU shall prepare and submit a biannual compliance report to the World Bank to document construction and compliance activities completed during the period and to track the resolution of any issues that may have occurred, for all sub-projects under implementation. The PIU will use daily compliance checklists and monthly compliance reports prepared by the construction contractors to develop the biannual report.

The biannual report should include the following information for the period:

- Key recommended follow up issues, actions, time frame and responsibility centre.
- An introduction, Reporting period and monitoring locations
- Summary of completed construction activities
- Estimate of remaining construction and schedule
- Summary of compliance activities
- Progress to date in implementing the ESMF, including key aspects monitored: such as waste management, health and safety practices, procurement/storage/and use of pesticides including their disposal, dust management, water quality, other environmental incidents and accidents, environmental awareness and training undertaken, etc.
- PIU's and supervisory consultants oversight activities (i.e., site visits)
- Updated list of all EHS incidents that occurred during the project, including attached notices of non-compliance that were issued
- Follow up information from any past issues that are still being resolved

A guideline of Environmental and Social Monitoring Plan is enclosed within **Annex**. A tentative environmental compliance monitoring plan template is provided in Table 6.4 below. This table is however not comprehensive and is not indicating the limitation of work rather it can be modified due to project circumstances and depends on the sub-project specific activities. If any changes are needed it would be done by the concern of ES of PMIDC and WB.

Parameter to be monitored	Location of monitoring / sites	Parameter sampling & analysis method	Frequency of monitoring	Parameter monitoring justification	Responsibility	
					Implementation	Monitoring

7.4 **Disclosures of** E&S Instruments

The ESMF has been prepared in consultation with the relevant State, PMIDC & City Level Municipal Corporations. 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 7.3: Disclosure of E&S Instruments

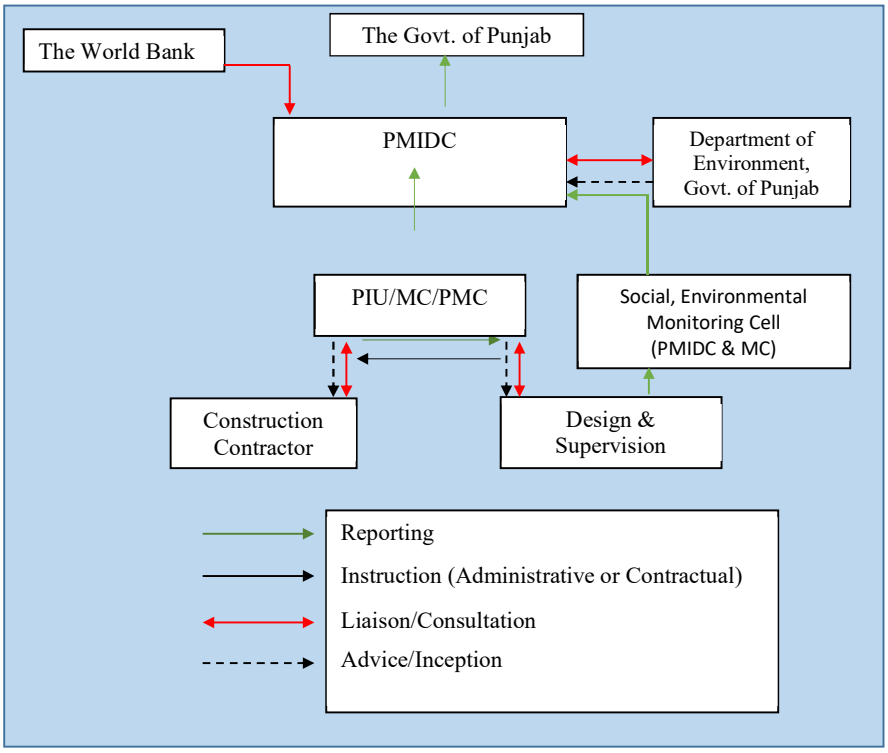
S/N	TOPIC	DOCUMENTS TO BE DISCLOSED	FREQUENCY	MEDIA
1	Stakeholder Engagement/Public Consultation	Minutes of formal public consultation	Within two weeks of meeting	PMIDC, PUGWIP Website if available, Local government Authority, World Bank.
2	Environmental & Social Management	ESMF, Report & Environment and Social Management Plans (ESMPs)	Prior to awarding works and to remain on website	PMIDC, PUGWIP Website if available, Local government Authority, World Bank.

CHAPTER SEVEN: 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

Figure 7.1: Institutional arrangement for project implementation



7.2 Key Institution Roles and Responsibilities

Table 7.1: Roles and Responsibilities of Key Institutions

S.No.	Organization	Responsibility
1	World Bank	• Review, approve and disclose ESMF, ESCP, ESIA, ESMP on WB's official website. • Review and approve RPF, RAP, SEP, LMP.

		• Conduct implementation support and supervision missions in order to ensure that the Project is in compliance with WB ESF requirements and standards.
2	PMIDC	• Prepare and implement the ESMF and submit for Bank approval • Disclose the ESMF on PMIDC, PIU website. • Prepare ESMPs according to ESMF • Perform the quality control and review of ESMPs. • Perform inspections of the implementation of ESMPs, make recommendations and decide whether additional measures are needed. • 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. • 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.
3.	Construction Contractor	• The contractor shall develop site specific ESMP before construction, as part of their method statement and submit to PIU for reviewing and approval; • 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 contractor will consult PIU and PMC; • Ensure that the construction work will complied with the approved EIA/EMP and the site EMP; • Control and minimize environmental impacts; • Ensure that all staff and workers understand the procedure and their tasks in the environmental management program; • Ensure environmental hygiene.
4.	Project Implementation Unit (PIU)	• In order to effectively manage ESMP implementation, an ESMP management team will be established and made operational after awarding the contract to contractor. • Project Director will be the head of team and will be assisted by the PMC. • Hold consultation meetings and prepare and distribute leaflets or other informative documents to inform communities. • Set up a multi-level GRM, monitor and address grievances related to the project under specified timelines.
5.	Project Management	• Responsible for monitoring the contractor's activities and to ensure adequate implementation of the ESMP by contractor.

	Consultants (PMC)	• Providing guidance to the PMU regarding any environmental and social issues which may arise during pre-construction and construction phase. • 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. • 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 • 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 • Ensure that all construction and site vehicles should abide by the latest emission norms of the country. • Monitor that all workers & labor of contractor should have valid ID cards to assess the site. • 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 construction site • Recommend to the PMU to take punitive action in non-compliance of ESMP & SHE Plan
6.	Social, Environmental & Communication Cell (SEC)	They will be given the responsibility to independently monitor the overall performance of environmental management of the project, including compliance with relevant GoI, GoP and WB regulations and the provision of the environmental and social management (ESMF) developed for the project. As a part of the monitoring, they will prepare a comparison of monitoring outcomes carried out, so that lessons learned, and best practices could be replicated. They will prepare the Compliance Report and submit to the PMIDC authority.

7.3 Proposed Institutional Arrangement for Implementation of the PUGWIP

Implementation arrangements for PUGWSIP will be fully streamlined into the existing government structure at the State and Local Government levels. PMIDC will have a Social, Environmental and Communication Cell (SEC) which will coordinate implementation of the ESMF. PMIDC will appoint a PMC for monitoring the contractor activities and implementation of ESMF. In the institutional arrangement procedure, Project Director (PD), and Team Leader/Deputy Team Leader will be directly involved. The PD

and DPD will be supported by Environmental Specialist and Social Development Specialist. Under PM/PIU, there will be relevant officials and consultants to support the PD. The SEC and PMU will submit monthly and quarterly progress reports on Environmental and Social Compliances to GM (P&D). After reviewing it will be sent to World Bank.

7.4 Assessment of capacity of PMU and PIU

An assessment of PMIDC and MC shows that 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. Therefore, a Social, Environmental and Communication cell is recommended. This cell will work independently to monitor and supervise the ESMF for the project. The PMC will work under the PMU. 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 PMU.

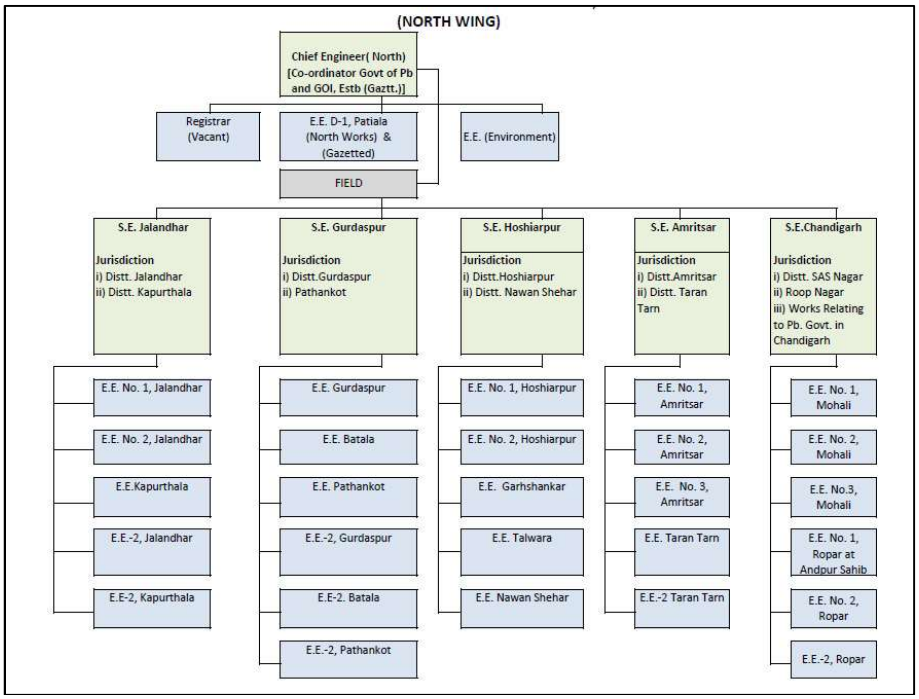


Figure 7.2: Existing institutional arrangement for Amritsar

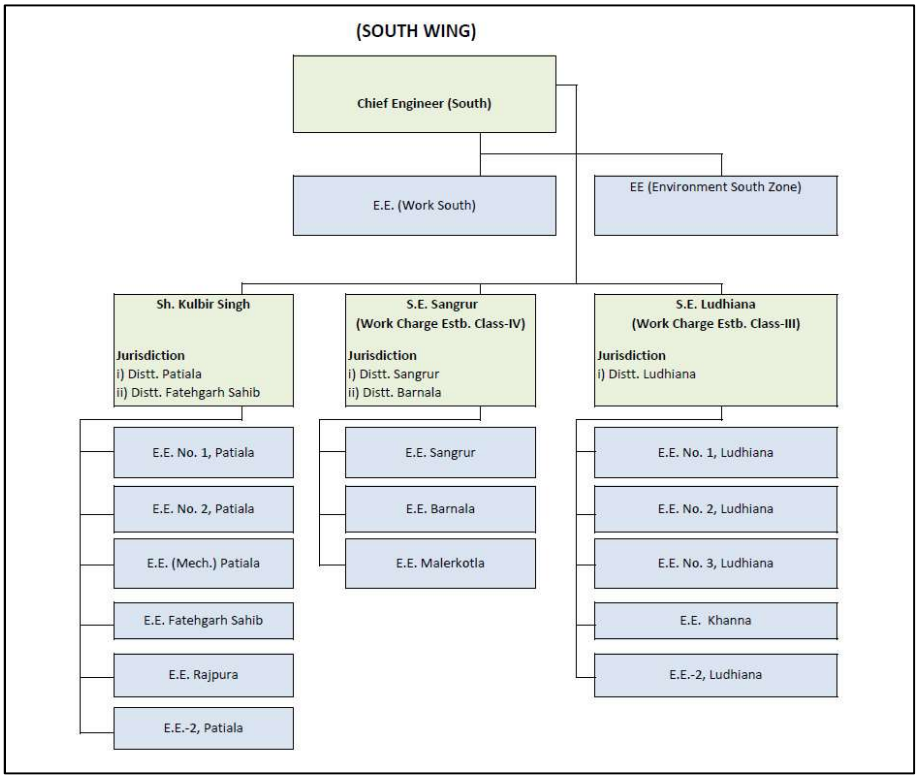


Figure 7.3: Existing institutional arrangement for Ludhiana

7.5 Roles and responsibilities for the implementation of the Framework ESMP

Project Director

He/she will head the PUGWSIP. He/she will be responsible for the project management specifically linked to administration in conjunction with the representatives of the MCL & MCA. The project coordinator will be supported by a small team of officers on a full-time basis, which will include a procurement officer, project accountant, auditor, program officer, M&E officers, ICT specialist, communication specialist, social & environmental officer, gender and grievance officer. Short-term technical assistants will also provide necessary expertise as and when required.

Environmental specialist (ES-PMU):

- Prepare appropriate and coordinated response to environmental aspects of the project and sub-projects
- Ensuring all activities of sub projects are in line with best practices and the framework of the ESMF and guidelines of the country

- Assess each sub-project and its environmental impacts; and
- Assess and monitor environmental mitigation measures for relevant subproject(s).

Social Development Specialist (SS-PMU)

- Preparing appropriate and coordinated response to social aspects of the project and sub-projects;
- Ensuring all activities of sub projects are in line with best practices and the framework of the ESMF and guidelines of the country
- Assessing each sub-project and its social impacts; and
- Assess and monitor social mitigation measures for relevant subproject(s).

Financial Management Specialist (FS – PMU)

- Ensuring all financial funds are in line with the World Bank Financial Management Framework Agreement; and
- Ensuring that all funds disbursed directly to the PMIDC by the Bank are used for the purpose intended with due regard to economy and efficiency.

Monitoring and Evaluation Specialist (M&E-PMU)

- Monitoring of mitigation measures that would be put in place for each sub-project;
- Perform periodic monitoring of all aspects as contained in the sub-project Environmental and Social Monitoring Plan;
- Monitoring the implementation of the ESMP to ensure it keeps to schedule; and
- Monitoring the implementation of the PUGWIP.

For the successful implementation of the ESMF, the roles and responsibilities of the key stakeholders is shown in Table 6.1 below.

Table 7.4: Roles and Responsibilities

S/N	STEPS/ACTIVITIES	RESPONSIBLE	COLLABORATION	SERVICE PROVIDER
1.	Identification and/or siting of the sub-project	City level Municipal Corporation	▪ Local authority	
2.	Screening, categorization and identification of the required instrument (use of World banks ESS procedure)	Environmental Specialist (ES-NSC)	▪ Beneficiary; ▪ Local authority ▪ Social Specialist (SS-NSC)	
3.	Preparation of the E&S document/instrument (ESIA, Env. Audit, simple ESMP, Reports, etc.) in accordance with the national/state legislation/procedure (taking into account the World Bank ESF requirements)			
	Preparation and approval of the ToRs	PMIDC		▪ The World Bank
	Preparation of the report		▪ Procurement Specialist ▪ Local authority	▪ Consultant
			▪	▪
	Public Disclosure of the document		▪ Project Coordinator	▪ Media (National Dailies) ▪ The World Bank

S/N	STEPS/ACTIVITIES	RESPONSIBLE	COLLABORATION	SERVICE PROVIDER
5.	(i) Integrating the construction phase mitigation measures and E&S clauses in the bidding document prior they're advertised; (ii) ensuring that the constructor prepares his ESMP (C-ESMP), gets it approved and integrates the relevant measures in the works breakdown structure (WBS) or execution plan.	Technical staff in charge of the sub-project	▪ Local Govt ES officers	▪ Local govt. ▪ Consultant
7.	Oversight of E&S instruments implementation (internal)	ES Cell	• M&E- NSC • PMIDC • Local authority	• PMC
	Reporting on project E&S performance and disclosure	Coordinator	▪ M&E officer ▪ Environmental Specialist Social Specialist	
	External oversight of the project E&S due diligence	PMIDC	▪ ES Officers ▪ Supervisor	
8.	Building stakeholders' capacity in E&S management	ESS - Local level officers	▪ Social Specialist	▪ Consultant ▪ Other qualified public institutions
9.	Independent evaluation of the E&S performance (Audit)	PMIDC	▪ ESS officer	▪ Consultant

7.5 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 of ESMS 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.

7.6 Documentation & Record Keeping

Documentation and record keeping system has to be established to ensure updating and recording of requirements specified in ESMP. Responsibilities have to be assigned to relevant personnel for ensuring that the ESMP documentation system is maintained and that document control is ensured. The following records should be maintained at site:

- Documented Environment Management System;
- Legal Register;
- Operation control procedures;
- Work instructions;
- Incident reports;
- Emergency preparedness and response procedures;
- Training records;
- Monitoring reports;
- Auditing reports; and
- Complaints register and issues attended/ closed

Table 7.5: Training and Capacity Strengthening Program

TRAINING PROGRAM	TIME OF TRAINING	TARGET AUDIENCE	TYPE OF TRAINING	DURATION
General training on World Bank Environmental & Social Framework, ESF and ES1 – ES10	Before Project effectiveness	PMIDC, PMU, PIU, PMC and any person directly related to project	Workshop & Orientation	7 day
Policy requirements, legal	Before Project effectiveness	PMIDC, PMU, PMC, MC	Seminar	1 day

TRAINING PROGRAM	TIME OF TRAINING	TARGET AUDIENCE	TYPE OF TRAINING	DURATION
and institutional responsibilities				
Occupational health and safety - PPE, Workplace EHS, Prevention of accidents at work sites Solid and liquid waste management, Hazardous waste management e.g. fuelling of vehicles Emergency Preparedness and Awareness campaign on HIV/AIDS	Before Project effectiveness	Project related persons, PMU, PMIDC, , Local NGOs, PIU/MC, Contractors	Workshop	4 sessions, each of 2 day duration
Public health and safety	Before Project effectiveness	Project related personals, PMU, MC, PMC	Workshop	1 day
Labour and Working Conditions: Terms and conditions of employment according to national working laws and regulations Contractor and sub-contractor codes of conduct Worker's organizations Child labour and minimum age employment rules	Before Project effectiveness	Project related persons, PMU, PMIDC, , Local MC, health-safety officer, Contractors, Labour leaders, labour suppliers	Worksop & Orientation	4 sessions with each comprising 2 days (can be merged with OHS module)
Grievance Redress Mechanism Module, design and	Prior to Project effectiveness and	PMIDC, PMU, PIU, MC, Civil Society, EHS officers, Local	Worksop &	Each session for 1 day

TRAINING PROGRAM	TIME OF TRAINING	TARGET AUDIENCE	TYPE OF TRAINING	DURATION
production of a training module addressing the following aspects: • Registration and processing procedure • Grievance redress procedure • Documenting and processing grievances •Use of the procedure by different stakeholders	thereafter once every six months	NGOs working with host population and, Contractors	Orientation	
Construction Waste Management: Information about the risks, along with health and safety advice, see the World Bank Group Environmental Health and Safety Guidelines on managing construction waste and the relevant international good practices Basic knowledge about handling procedures and risk management Using protective and safety equipment Information about the waste sorting process	Prior to Project effectiveness and thereafter every three months	ES specialists, EHS officer, MC personals, Contractors	Worksop & Orientation	Each session for 1 day

TRAINING PROGRAM	TIME OF TRAINING	TARGET AUDIENCE	TYPE OF TRAINING	DURATION
Safe procedures for managing waste in dumps Hazardous waste management Refuelling procedure Spillage of soil management				
GBV Risk Module Raising awareness and measures to prevent and mitigate GBV risks The topics, activities and targeted groups will be developed in the GBV Action Plan including GBV-specific GRM	Prior to Project effectiveness and thereafter every six months	Project related persons, PMU, PMIDC, , Local MC, health-safety officer, Contractors, Labour leaders, labour suppliers	Worksop & Orientation	Each session for 2 days

7.7 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 only (USD 610,000) – an equivalent of four crores and thirty three lakh and ten thousand India rupees only (INR 4,33,10,000)**. The breakdown is shown in Table 6.3 below

Table 7.6: 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*

8 STAKEHOLDER ENGAGEMENT AND GREVIANCE REDRESSAL MECHANISM

At State level, the PMIDC is responsible for coordination of PUGWSIP 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 adequate 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 fore front of the Local authority when carrying out consultations

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

8.2 Stakeholder Identification

For the PUGWSIP, stakeholders shall be defined as every individual, institution and group that has vested interest in the successful planning and subsequent execution of this 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 have been primarily synthesized into two categories that have been identified as:

- Project-affected parties: those who are or likely to be affected by the project, and
- 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

Table 8.1: Stakeholder Identification

AFFECTED PARTIES	IDENTIFICATION METHOD
Project affected parties	▪ Identify the local government areas that falls within a 500 meter radius of the proposed health facility ▪ Use already identified individuals to identify other individuals and groups ▪ Use identified groups to access other groups and individuals ▪ Review of available data to assess relevant individuals and groups

AFFECTED PARTIES	IDENTIFICATION METHOD
Other interest parties	▪ Identify pivotal individuals or groups through formal groups, local clubs, community halls and religious places ▪ Be aware of similar groups or individuals

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.

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)

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

Objective of the stakeholders Consultations

- To obtain the views & opinions of the direct & indirect stakeholders for sustainable and effective water supply services
- 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.
- To find out environmental & social risks involved during the process
- To find out the possible solutions from the stakeholders

Target Stakeholders

- Ward councillors, Mayor

- NGOs/ - Youth Employment Federation
- Resident welfare Associations
- Local Community
- Local street vendors
- Shopkeepers
- Senior Citizens

STAKEHOLDER CONSULTATIONS IN LUDHIANA

Meeting with Mayor Sh. Balkar Singh Sandhu was done on 13th February at 6:00 PM. He was appraised about the project. Brief introduction of project activities to be carried out was doneby the members from the Urban Local bodies who appraise the stakeholders about the intended project.

Table 2: Summary of Consultations at Ludhiana

S. No	Ludhiana OHSR sites
1	Venue-Manna Singh Nagar Date 15-02-2020, Time 2:00 PM Number of Participants -10
2	Nehru Rose Garden Date:18/02/2020 Time 3:00PM Number of Participants -8
3	Gyaspura ward 31, Date 20-02-2020, Time: 12:00 PM Number of Participants: 14
4	M Block Park Date 19/02/2020, Time: 11:00 AM Number of Participants-6
5	Dairy Complex Tajpur Road, B Block, Date 19/02/2020, Time: 5:00 PM Number of Participants-14
6	NKH Park, Near Cheema Chowk, ward no. Date 22/02/2020 Time: 11:00 AM, Number of Participants-7
7	Income Tax Department land, opposite government Polytechnic college for girls, Date :21/02/2020, Time: 9:00 AM, Number of Participants-6
8	New National Colony, Date :18/02/2020, Time: 11:00 AM, Number of Participants-8

Table : 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	• Concerns: Interrupted water supply Suggested measures: repair old OHSR before initiation of construction of new Storage tanks, • Concerns: Safety of OHSR is an issue Suggested measures: Boundary wall surrounding the OHSR should be made, • Concerns: environmental and safety measures

		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	Suggested measures: Safety Measures need to be adopted • 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. 7.Their expectations from the project	• Concerns: Water supply timing needs to be ensured Suggested measures: 24x7 supply would be required. • Concerns: Safety of OHSR is required Suggested measures: boundary walls need to be erected around OHSR for safety of the water reservoir. • Concerns: Awareness about the OHSR Suggested measures: Slogans regarding water conservation and save water on the boundary walls should be written • Concerns: Green cover around the OHSR Suggested measures: should be covered with trees. • Concerns: Water supply pressure need to be adequate Suggested measures: To maintain the water supply pressure, height of the water tank should 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	• Concerns: Location could be reassessed Suggested measures: Alternate location to be checked and evaluated before undertaking construction. • Concerns: Daily work routine gets hampered during process of construction. Suggested measures: Maximum care needs to be taken to minimize disruption • Concerns: Greenery will be lost Suggested measures : Plantation needs to be done around the OHSR • Concerns: Security measures need to be in place Suggested measures: security measures will be taken care of. • Concerns: Alternate Water supply needs to be ensured Suggested measures: existing tube-well supply should not be disrupted (remain as back up). • Concerns: Drinking water quality needs to be good Suggested measures: availability of good quality water • Concerns: Debris during transportation of construction material can be a problem Suggested measures: Vehicles used for carrying construction materials should be covered. • 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 neighbourhood	• Concerns: area is densely populated, not appropriate for construction of OHSR. Suggested measures: Participants raised objection against the construction. • Concerns: poor condition of existing water tanks Suggested measures: Old one should be demolished and alternate location for new OHSR

		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	• 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 • Concerns: Greenery will be lost due to construction Suggested measures: plantation be done in the area • 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	• 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 • Concerns: tampering of pipeline takes place

		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	Suggested measures : OHSR body should made up of steel so that there can be no tampering • Concerns: damaged, inaccessible roads during construction Suggested measures : pipelines should be reconstructed at the earliest • Concerns: Digging in the residential/ commercial areas Suggested measures: should be done during night hours , so that the traffic should not be inconvenienced • Concerns: Beautification of the area Suggested measures : After the construction work park should be beautified • 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	• 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 • Concerns: Inconvenience during construction phase Suggested measures: convenience of residents be taken into consideration during construction & laying of pipelines • 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 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	• Concern: densely populated and several houses around the proposed site Suggested measures: so during OHSR construction precautions need to be taken • Concerns: Safety requirements Suggested measures: OHSR should be surrounded by a boundary wall

Table : 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 activities 6.Scale of activities including civil work, influx of labour and their activities at the project sites. 7.Their expectations from the project	• Concerns- appropriate height of OHSR to maintain the flow of water Suggested measures: Greater Height • Concerns: Availability & timing of water Suggested measures: Availability of 24x 7 water supply in the area • Concern: Safety issues Suggested measures: safety should be ensured • Concern: Maintenance of greenery Suggested measures: plantation of trees around the OHSR
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	• Concern: lack of OHSRs in other areas Suggested measures: install OHSRs also at other locations • Concerns: Quality of water Suggested measures: ensure good quality of water • Concerns: Tampering of OHSR Suggested measures: security at the OHSR site • Concerns: water pressure need to be adequate Suggested measures: Height of OHSR to be proper.

Sl. No.	Date and Location	Questions Discussed	People's suggestion
		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	
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 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	. • Concerns: water quality is poor Suggested measures: Good water quality • Concerns: debris from vehicles used in construction Suggested measures: Vehicles used for carrying construction materials should be covered. • Concerns: Emergency Measures: provision of extra motors for emergency.

Sl. No.	Date and Location	Questions Discussed	People's suggestion
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	• 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
5	**Gurnam Nagar Ward no 36 Date- 24/02/2020, Time 10:00 AM, Participants-30**	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 the construction activity	• Concerns: Existing pipelines are 40 years old, leaking and in poor condition leading to drinking water getting contaminated with sewerage water Suggested measures: New water supply connections should be laid down • Concerns: Need for quality, potable water • Concerns: Delaying construction work Suggested measures: Construction work should be in continuation and finished quickly

Sl. No.	Date and Location	Questions Discussed	People's suggestion
		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	

8.6 Grievance Redress Mechanism (GRM)

Having a GRM shows willingness for transparency in any project. For a GRM to be effective as an all-inclusive engagement tool, it must be structured to accommodate everyone including the general public. In addition, clear procedures must be established for complaints and made easily available to the public by way of public notices and other media/signs posted in all participating MCs.
The detailed GRM is included in the SEP.

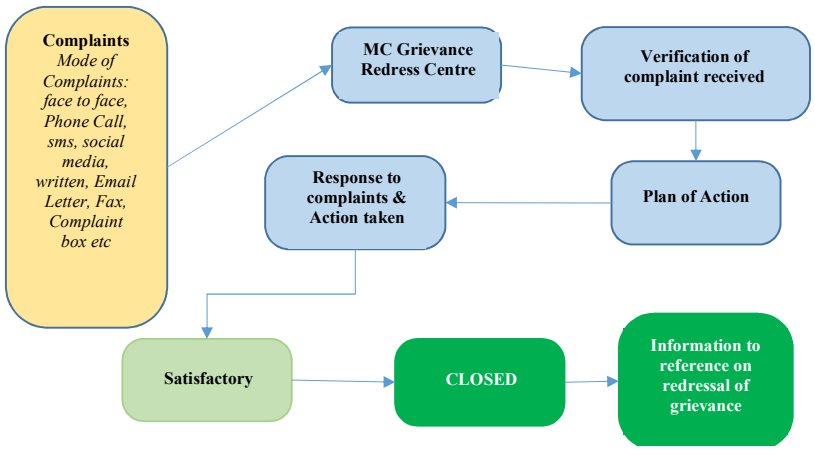


Figure 8.1: Grievance Redress Flowchart

For the PUGWSIP, 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. The PMIDC & Local authority should be actively involved in the GRM.

8.6.1 Guiding Principles

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

- **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.
- **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.
- **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 analyze all issues with transparent objectivity.
- **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.
- **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.
- **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.
- **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.
- **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.

8.6.2 Grievance Procedure

- **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.

- **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.
- **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.
- **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.

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 1: Sample Environmental 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 natural features?			
vi)	Any other Sensitive Environmental Components?			

Sl.no	Environmental Aspects	Yes	No	Details
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)	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, excavation, earthwork or any other activity?			
vii)	Will the project involve any quarrying/ mining etc?			

Sl.no	Impacts	Yes/ May create	No	Details
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			
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)			

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

Enclosures: Provide maps with the geographical location of the project; and 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 any other information to describe the project, locations and possible impact as required.

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,	PMU	

substantial, high) by	Environmental Specialist	
Reviewed & accepted by	PMU	
	Environmental Specialist	

Annex 2: Sample Social Screening Form

Project Name ……
Project location …….

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 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				

Land Use, Resettlement, and/or Land Acquisition				
Sl.no	**Components**	**Yes**	**No**	**Details**
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				
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.:		

This Screening sheet must be completed for each of the proposed Project by respective social team and forwarded to the Social Specialist in Respective PMU along with the following enclosures.

(**Enclosures**: Land details for the project sites, location, survey numbers, extent available and required, land use classification, current use of the site, 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 StandardStandards 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 3: Generic ESMP Terms of Reference, Guidelines and Outline

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
    i. the potential environmental and social impacts resulting from project activities
    ii. the proposed mitigation measures;
    iii. the institutional responsibilities for implementation;
    iv. the monitoring indicators;
    v. the institutional responsibilities for monitoring and implementation of mitigation measures;
    vi. The costs of activities; and
    vii. 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.
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.

    (i) 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.

    (ii) 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.

(iii) 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.

(iv) 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:
    a. List of persons / institutions meet
    b. Technical drawings, plans & maps
    c. Resettlement Action Plan
    d. Stakeholders Engagement Plan and Grievance Redressal
    e. Consultations details -MoM, signatures, photographs
    f. Labour Management Procedure
    g. Detailed Primary baseline data for Physicochemical, Social & Biodiversity
    h. Traffic management plan

ANNEX 4: 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 PUGWSIP. 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:

- To assess the current waste management situation;
- To assess local handling, treatment and disposal options;
- Capacity- building Requirements for Staff;
- Waste Categorization Stream (types of waste);
- Waste Collection and Treatment; and
- 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	▪ Ensure proper handling, and disposal of wastes Rehabilitation/Construction waste should be disposed weekly ▪ Waste must be stored temporarily in designated areas daily ▪ Waste should be evacuated weekly ▪ 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.	▪ A management should be put in place and should be prepared in accordance with the ○National Solid & Hazardous Management regulation & Guideline ○State Government/Pollution Control Board Regulation ○Local Govt/MC level regulation	O&M Contractor/ MC	

PROJECT PHASE	DESCRIPTION	WASTE TREATMENT	RESPONSIBILITY	COST ($)
			TOTAL	

ANNEX 5: Labour Management Procedure

The PUGWSIP 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:

- The conduct of hazardous work, such as working at heights or in confined spaces, use of heavy machinery, or use of hazardous materials
- Likely incidents of child labor or forced labor, with reference to the sector or locality
- Likely presence of migrants or seasonal workers
- Risks of labor influx or gender-based violence
- 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):

- engagement and management of project workers
- engagement and management of contractors/subcontractors
- occupational health and safety (OHS)
- training of workers
- 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:

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

Terms and conditions
This section sets out details regarding:

- Specific wages, hours and other provisions that apply to the project
- Maximum number of hours that can be worked on the project
- Any collective agreements that apply to the project. When relevant, provide a list of agreements and describe key features and provisions
- 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:

- The selection process for contractors, as discussed in ESS2, paragraph 31 and GN 31.1.
- 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
- 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.

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 Februar y 2020 at 11.23 AM*	*Piping laying excavatio n 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 Februar y 2020*	*Resolved and informed to the reporter*
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

ANNEX 6: Stakeholders Attendance Sheets, MoM & Photographs

AMRITSAR CITY CONSULTATIONS

Annexure-6.1 (List of Participants)

Ward No-40

ATTENDENCE SHEET

Punjab Urban Governance and Water Supply Improvement Project

Social Consultation

By AFC India Limited

Date -: 21-2-2020 WARD - 40

Sr. No.	Name	Phone No	Sign.	Remarks
1	Surjit Singh	9463479466	[illegible]	Yes
2	Baldev Singh	9463318485	B.S.	Yes
3	Rajinder Singh	9780021927	[illegible]	Yes
4	[illegible]	7508887472	[illegible]	Yes
5	Vijay Choudhary	9463820430	[illegible]	Yes
6	[illegible] Singh	6239462270	[illegible]	No
7	[illegible]	9877164213		
8	[illegible]	99150-47111	[illegible]	[illegible]
9	[illegible] Singh	9914172645	[illegible]	[illegible]
10	Surjeet Singh	9837860017	[illegible]	Yes
11	Sumeet Kumar	9870831993	S.K.	Yes
12	Harinder Singh	9888528701	[illegible]	Yes
13				
14	[illegible]	98157-38179	[illegible]	[illegible]
15	Arvinder Pal Singh	9988507070	[illegible]	Yes
16	Dalbir Singh Jamabar	9872481591	[illegible]	Councillor ward [illegible]
17	[illegible]	9815534439	[illegible]	President, Youth Cong.
18	Jasvinder Singh	9914715787	[illegible]	
19				
20	Gurdeep Singh Bedi	98140-98970	[illegible]	Ward President 40 [illegible]
21	Balbir Singh	9878010491	Balbir Singh	[illegible]
22	Harjinder Singh	9815502280	[illegible]	Yes
23	Tajinder Singh	9988007091	[illegible]	Yes
24	Talwinder Singh	9888671921	[illegible]	Yes
25	KAMALJEET S	8559042751	[illegible]	Yes
26	Prem Singh	7837902454	[illegible]	Yes
27	[illegible]	9815851224	[illegible]	Yes
28	Harjinder Singh	9915047388	Harjinder Singh	Yes
29	[illegible] Singh	9803100180	[illegible]	Very good [illegible]
30	Sarbjeet Singh	9815834639	[illegible]	Very good Request
31	[illegible]	9779444562	[illegible]	2
32	[illegible]	[illegible]	[illegible]	D.O
33	[illegible]	[illegible]	[illegible]	D.O
34	Gurpreet Singh	7814145125	[illegible]	Yes
35	Jiwanjyot Kaur	9781442953	[illegible]	Yes
35	S. [illegible] Singh	9888857599	[illegible]	Yes
36	Rachna	9780111052	[illegible]	Yes
37	Pooja	~~9818828684~~ 9888128784	Pooja	Yes
38	Pooja	7719653391	Pooja	Yes

ATTENDENCE SHEET

Punjab Urban Governance and Water Supply Improvement Project

Social Consultation

By AFC India Limited

Date -: 21-2-2020 WARD - 40

Sr. No.	Name	Phone No	Sign.	Remarks
39	Sarbjeet Singh	9646703316		
40	Jaspal Kaur	8146111211		
41	ASHISH DIXIT	9799816896		AFC CONSULTANT
42	Meena Rawat (AFC)	8586025735		

Ward No-54

ATTENDENCE SHEET

Punjab Urban Governance and Water Supply Improvement Project

Social Consultation

By AFC India Limited

Date -: 21-2-2020 WARD 54

Sr. No.	Name	Phone No	Sign.	Remarks
1	[illegible]	9801110311	[illegible]	
2	Prabhjot Singh			
3	Harpreet Singh	8837658245	[illegible]	
4	VISHAL SHARMA	9888387578	[illegible]	
5	VIKAS [illegible]	9878676187	[illegible]	
6	JASBIR SINGH	9463964879	[illegible]	
7	Jagjiwan [illegible] Bombay Print Shop	93565-32872	[illegible]	[illegible]
8	Sachin Sharma	9988590158	[illegible]	
9	Ashwani Kumar	9875975121		
10	Jaswinder Singh	9875975130	[illegible]	
11	Nikhil Sharma	7973240824	[illegible]	
12	Ravi Malhotra	8437162425	[illegible]	
13	Rajinder Sharma	8284920658	[illegible]	
14	Jaswant Rai	9855868631	Jaswant Rai	
15	Rajinder Kumar	9855150673	[illegible]	
16	[illegible]			
17	[illegible]			
18 -	[illegible]			
19	Kamal Jit Singh	9888249685	Kamal Jit Singh	Thank's
20	Sameer Palia	9915867126	Sameer	
21	Sadhu [illegible]	9872481181	[illegible]	
22	Rajeev Giri	8888882021	Rajeev	
23	Tarpal Kaur	8146111311	Tarpal	
24.	Manoj Kumar	8586025735	[illegible]	
25.				
26.	Bhupinder Singh	6284967506	[illegible]	
27	Sandeep [illegible]	9780405785	[illegible]	
28	ASHISH DIXIT	8299816896	ashish	AFC consultant

Ward No-32

ATTENDENCE SHEET

Punjab Urban Governance and Water Supply Improvement Project

Social Consultation

By AFC India Limited

Date -: 21-2-2020 VENUE (WARD 32)

Sr. No.	Name	Phone No	Sign.	Remarks
	RAJESH MADAN	9914592679	[illegible]	Councillor ward No 32
	[illegible] Singh	9592235916	[illegible]	
	Satpal Singh	7394000032	[illegible]	
	[illegible]	9914242491	[illegible]	
	Baljit Singh	8872163592	[illegible]	
	[illegible]	99143985[illegible]	[illegible]	
	[illegible]	9915068503	[illegible]	
	[illegible]	9878680355	[illegible]	
	[illegible] singh	8528135361		
	[illegible]	9781951954		
	[illegible]	980304973[illegible]		
	Gurmeet [illegible]	9988383617		
	[illegible]			
	[illegible]			
	[illegible]			
	[illegible]			
	[illegible]			
	[illegible]			

Pg-1

ATTENDENCE SHEET

Punjab Urban Governance and Water Supply Improvement Project

Social Consultation

By AFC India Limited

Date -: 21-2-2020 VENUE (WARD 32)

Sr. No.	Name	Phone No	Sign.	Remarks
	ਸਵਿੰਦਰ ਕੌਰ			
	ਰਮਨਾ			
	ਰਣਜੀਤ ਕੌਰ			
	ਕਿਰਨ ਕੌਰ			
	ਕਾਲੋ ਕੌਰ			
	ਸਿੰਦਰ ਕੌਰ			
	ਸਰਬਜੀਤ ਕੌਰ			
	Joginder Pal Sr. (JE)	98759-75129		
	Rajeev Shri	8888882021		21/2/20
	Manoj Kumar	8528025735		
	AISHISH DIXIT	8299816896		AFC consultant

Pp.2

Ward No-36

ATTENDENCE SHEET

Punjab Urban Governance and Water Supply Improvement Project				
Social Consultation				
By AFC India Limited				
Date -: 24-2-2020		WARD-NO 36 GURNAAMNAGAR		
Sr. No.	Name	Phone No	Sign.	Remarks
1	[illegible]	9501358894	[illegible]	
2	[illegible] Singh	7696460429		
3	[illegible]	98555972[illegible]	[illegible]	
4	[illegible]	9914814[illegible]	[illegible]	
5	[illegible]	9872015210	[illegible]	
6	Balwant Singh [illegible]	9464296522	[illegible]	
7	BHAGWAN SINGH	9781695623	[illegible]	
8	Harbans Singh	9814048260	[illegible]	
9	Jasbir Singh	7936269632	[illegible]	Councilor
10	[illegible]	988848996	[illegible]	
11	GURDEEP SINGH	9915599616	[illegible]	
12	[illegible]	9417035326		
13	[illegible]	9888637571		
14	Sarvan [illegible]	9855776076		
15	[illegible] S.	8872359975	[illegible]	
16	Ajit Sin.	9814274637		
17	[illegible]			
18	Narvan [illegible]	9815175039	[illegible]	
19	Partap Singh	9814022300		
20	Satwinder S.	9988671874	[illegible]	
21	Meera	8427554192		
22	Paramjeet Singh	9988332394	[illegible]	
23	[illegible]			
24	[illegible]	94171-11099		
25	[illegible]	9988017838	[illegible]	
26	[illegible]	9988[illegible]	[illegible]	
27	[illegible]	9914661271		
28	[illegible]	[illegible]		
29	[illegible]			
30	Satnam Singh	9814507360		

Jasbir Singh
JASBIR SINGH
Nizampuria
Ward No. 36, Councillor

Annexure-6.2 (List of Resolutions)

Ward No-40

Punjab Urban Governance and Water Supply Improvement Project
Social Consultation
By AFC India Limited

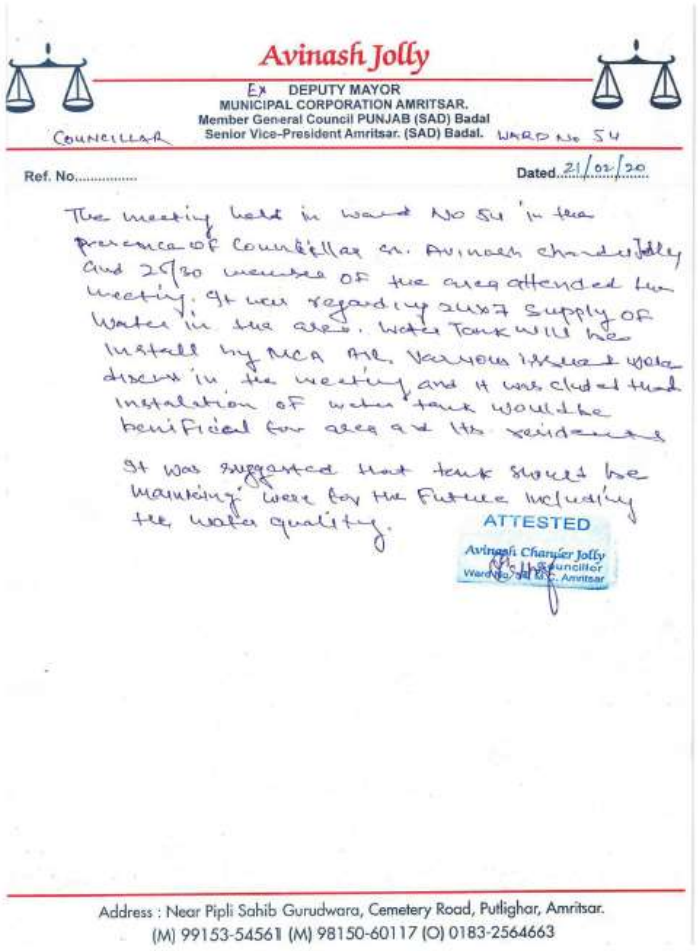
Date -: 21.2.20 **Venue** TAJ PALACE (WARD NO 40)

Comments and Suggestions:

ਅੱਜ ਮਿਤੀ 21.2.2020 ਨੂੰ [illegible]

D Singh 21-2-20
ਦਲਬੀਰ ਸਿੰਘ ਮੰਮਣਕੇ
ਕੌਂਸਲਰ
ਵਾਰਡ ਨੰ: 40
ਨਗਰ ਨਿਗਮ, ਅੰਮ੍ਰਿਤਸਰ

Ward No-54



Avinash Jolly

Ex DEPUTY MAYOR
MUNICIPAL CORPORATION AMRITSAR.
Member General Council PUNJAB (SAD) Badal
Senior Vice-President Amritsar. (SAD) Badal.

COUNCILLAR WARD No 54

Ref. No.....

Dated 21/02/20

The meeting held in ward No 54 in the presence of Councillor Sh. Avinash Chander Jolly and 25/30 members of the area attended the meeting. It was regarding 24x7 Supply of water in the area. Water Tank will be installed by MCA Adv. Various issues were discussed in the meeting and it was concluded that installation of water tank would be beneficial for area & its residents.

It was suggested that tank should be working well for the future including the water quality.

ATTESTED
Avinash Chander Jolly
Councillor
Ward No. 54 M.C. Amritsar

Address : Near Pipli Sahib Gurudwara, Cemetery Road, Putlighar, Amritsar.
(M) 99153-54561 (M) 98150-60117 (O) 0183-2564663

Ward No-32

Punjab Urban Governance and Water Supply Improvement Project
Social Consultation
By AFC India Limited

Date :- 21.02.2020 Venue Pind Khankot Sardarawalan (Ward 32)

Comments and Suggestions:

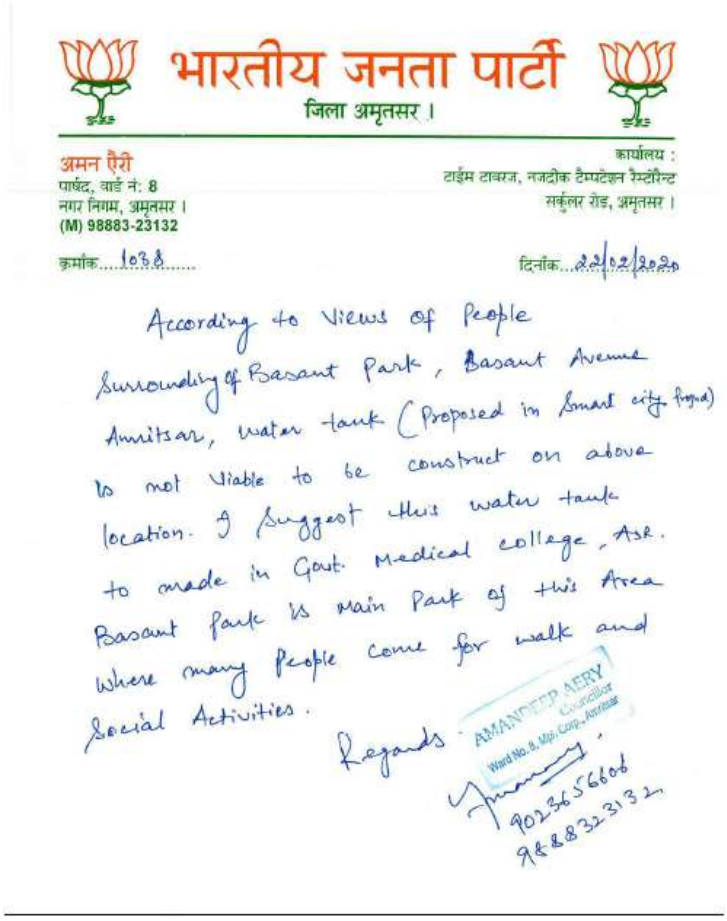
Today it is joyous day for install of water Tank for supply of fresh water for the People of my ward No 32. Khankot Sardarawala and supply of surrounding. See for last 60 years there is no basic facility for my particular area People. I thankfull to world bank to give the facility to my area Peoples.

Note:- Suggestion

It is also requested to install another water tank in my ward area Dalip Avenue Dashmesh Avenue and Gurteg Bhadur Avenue and surrounding area. It is necessary because there area people drink water chemically. And every person in these area are not quite well due to chemical waters.

21/02/2020
RAJESH MADAN
WARD NO-32

Ward No-8



भारतीय जनता पार्टी
जिला अमृतसर।

अमन ऐरी
पार्षद, वार्ड नं: 8
नगर निगम, अमृतसर।
(M) 98883-23132

कार्यालय :
टाईम टावरज, नजदीक टैम्पटेज़न रैस्टोरैन्ट
सर्कुलर रोड, अमृतसर।

क्रमांक 1038 दिनांक 22/02/2020

According to Views of People Surrounding of Basant Park, Basant Avenue Amritsar, water tank (Proposed in Smart city Proj.) is not Viable to be construct on above location. I Suggest this water tank to made in Govt. Medical college, Asr. Basant Park is main Park of this Area where many people come for walk and Social Activities.

Regards

AMANDEEP AERY
Councillor
Ward No. 8, Mpl. Corp. Amritsar

9023656606
98883-23132

Ward No-36

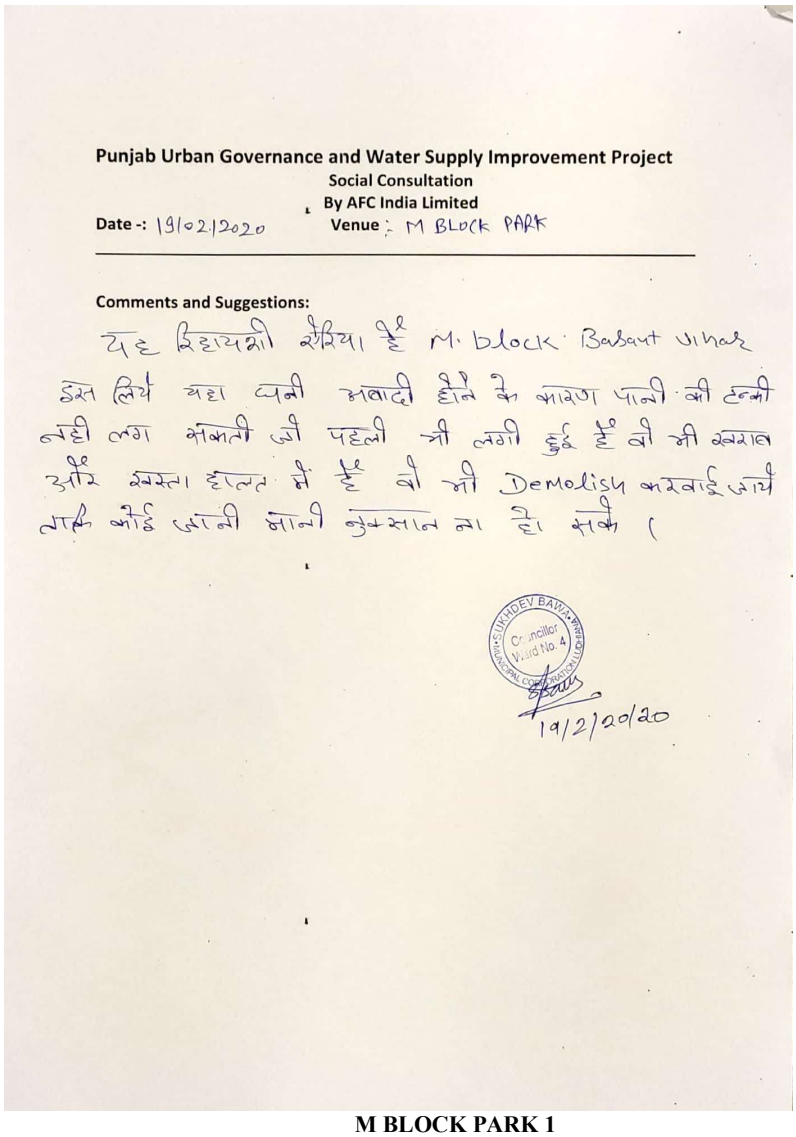
Punjab Urban Governance and Water Supply Improvement Project
Social Consultation
By AFC India Limited

Date -: 24-02-2020 **Venue** GURNAAM NAGAR WARD NO 36

Comments and Suggestions:

JASBIR SINGH
Nizampuria
Ward No. 36, Councillor

LUDHIANA CITY CONSULTATIONS



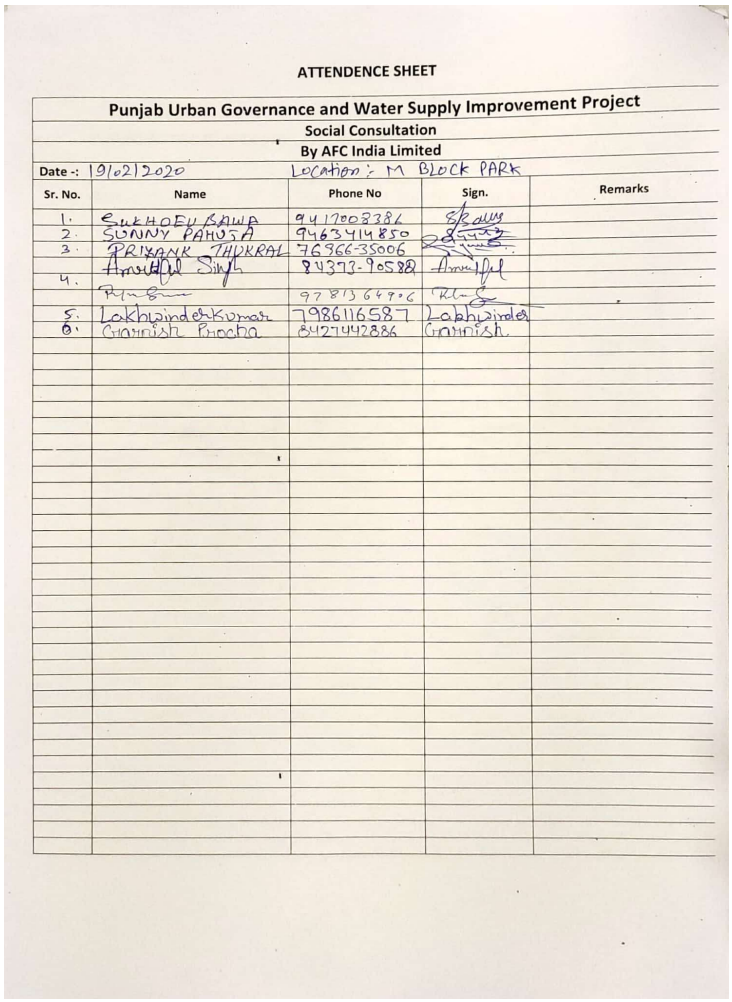
Punjab Urban Governance and Water Supply Improvement Project
Social Consultation
By AFC India Limited
Date -: 19/02/2020 **Venue :** M BLOCK PARK

Comments and Suggestions:

यह डिस्पेंसरी स्थित है M. block Basant Vihar
इस लिये यहा पानी आबादी होने के कारण पानी की इतनी
नहीं लग सकती जो पहली भी लगी हुई है वो भी खराब
और खस्ता हालत में है वो भी Demolish करवाई जाये
ताकि कोई जानी मानी नुकसान ना हो सके।

SUKHDEV BAWA Councillor Ward No. 4
19/2/2020

M BLOCK PARK 1



ATTENDENCE SHEET

Punjab Urban Governance and Water Supply Improvement Project

Social Consultation

By AFC India Limited

Date -: 19/02/2020 Location : M BLOCK PARK

Sr. No.	Name	Phone No	Sign.	Remarks
1.	SUKHDEV RAWA	9417003386		
2.	SUNNY PAHUJA	9463414850		
3.	PRIYANK THAKRAL	76366-35006		
4.	Amritpal Singh	84373-90588		
		97813 64906		
5.	Lakhwinder Kumar	7986116587		
6.	Manish Bhatia	8427442886		

M BLOCK PARK 2

Punjab Urban Governance and Water Supply Improvement Project

Social Consultation

By AFC India Limited

Date -: 18/2/2020 **Venue** New National Colony

Comments and Suggestions:

(1) आस पास बहुत आबादी है इस लिए उस चीज को नज़र रखते हुए Water Tank ~~ka~~ का निर्माण किया जाए।

(2) Water Tank को Link कैसे करेंगे, उसके लिए हम Councilar के साथ पहले बात करी जाएगी।

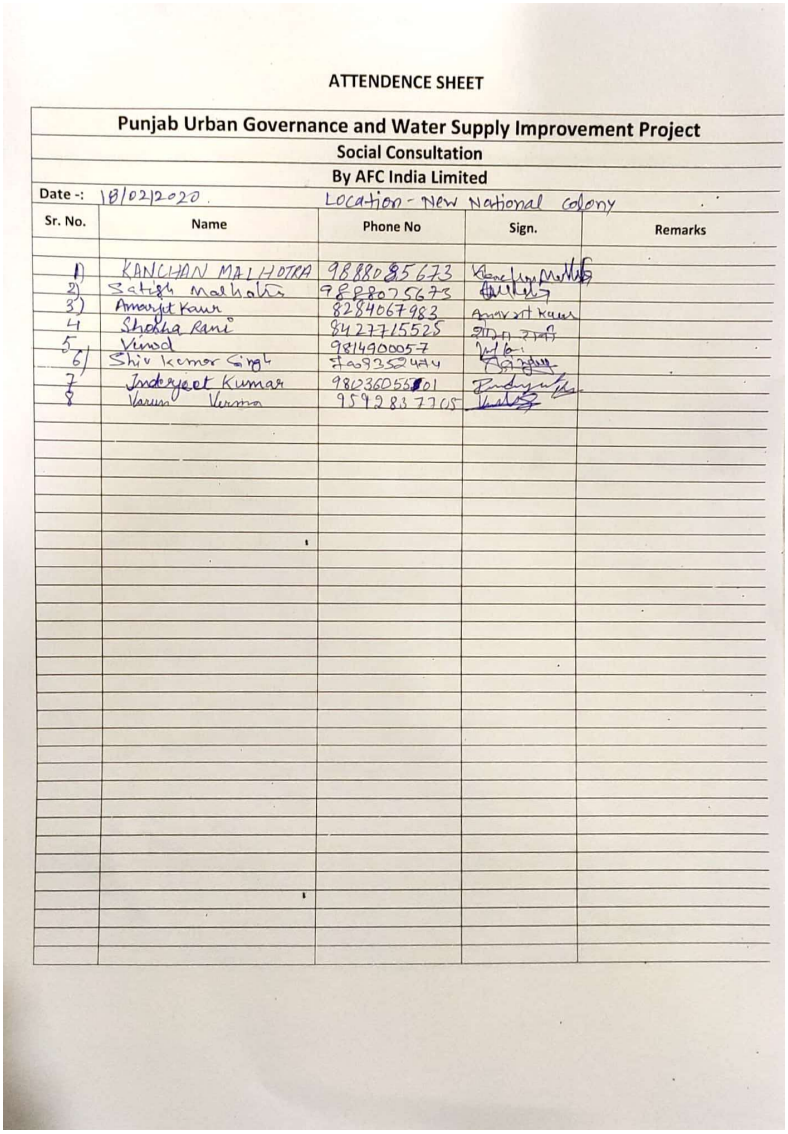
(3) Water Tank के चारो तरफ दिवार का निर्माण किया जाए।

(4) Water Tank के चारों तरफ पेड़ों को लगाया जाये तथा सौन्दर्यीकरण का कार्य किया जाये।

(5) Water Tank में 24*7 पानी की सप्लाई की व्यवस्था की जाये जिससे Ward No. 15, New National Colony को सप्लाई मिल सके।

MANCHAN MALHOTRA
Councillor
Ward No. 15
MUNICIPAL CORPORATION LUDHIANA

NEW NATIONAL COLONY1



ATTENDENCE SHEET

Punjab Urban Governance and Water Supply Improvement Project

Social Consultation

By AFC India Limited

Date -: 18/02/2020 Location - New National Colony

Sr. No.	Name	Phone No	Sign.	Remarks
1)	KANCHAN MALHOTRA	9888085673		
2)	Satish Malhotra	9888075673		
3)	Amarjit Kaur	8284067983		
4	Shobha Rani	8427715525		
5	Vinod	9814900057		
6)	Shiv Kumar Singh	7a9352444		
7	Inderjeet Kumar	9803605501		
8	Varun Verma	9592837705		

NEW NATIONAL COLONY 2

Punjab Urban Governance and Water Supply Improvement Project

Social Consultation

By AFC India Limited

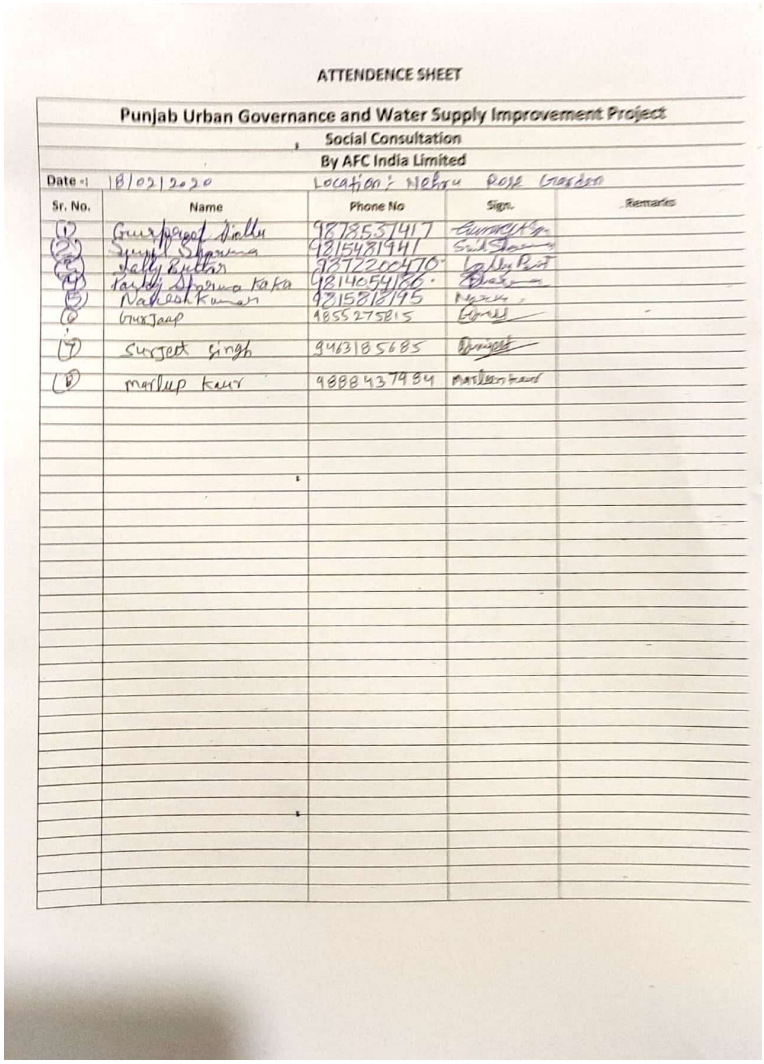
Date -: 18/02/2020 **Venue :-** Nehru Rose Garden

Comments and Suggestions:

1. Its a good initiative to start 24x7 water supply.
2. Boundary walls should be erracted aroundit for the Safty of water reserve.
3. On the Bounchary walls slogans regarding water conservation and save Water should be advertised.
4. Green Cover should be maintained aroind it.
5. Hight of the water tank should be taken into consideration regarding the pressure could be maintained of water Supply.

PANKAJ SHARMA
KAKA
Councillor
Ward No. 74

NEHRU ROSE GARDEN 1



ATTENDENCE SHEET

Punjab Urban Governance and Water Supply Improvement Project

Social Consultation

By AFC India Limited

Date :- 18/02/2020 Location :- Nehru Rose Garden

Sr. No.	Name	Phone No	Sign.	Remarks
1	Gurpreet Dalla	9781537417		
2	Sunil Sharma	9215481941		
3	Lally Batra	9872200470		
4	Tally Sharma Kaka	9214054180		
5	Nadeem Kumar	9215812795		
6	Gurjeep	9855275815		
7	Surjeet Singh	9463185685		
8	Manjit Kaur	9888437484		

NEHRU ROSE GARDEN 2

Punjab Urban Governance and Water Supply Improvement Project

Social Consultation

By AFC India Limited

Date -: 19/02/2020 **Venue** Dairy Complex, Tajpur Road

KULDEEP JANDA
Councillor Ward No.14
M.C. LUDHIANA

Comments and Suggestions:

(1) Dairy complex Block A, B & C में पार्क हैं यहाँ 3 overhead water tank लग सकते हैं कृपया पानी की कमी को ध्यान में रखते हुये पानी की टंकीयों के लगाया जाये क्योंकि Block A और C में पहले ही बिना टंकी के Tubewell चल रहे हैं कृपया Block B में New overhead tank लगा सकता है।

(2) आबादी Gk state Block C में पार्क हैं, Gk state में पहले से ही 1.5 ML water tubewell की Planning हो चुकी है, तो वहाँ पानी की टंकी लग सकती है।

(3) Tajpur Road और Tibba Road के बीच में Budda नाला चल रहा है। पीने वाले पानी के लिये Budda नाला cross करने के लिये जिये Dairy complex के tubewell और टंकी का पानी याच लगाती हुयी आबादी को मिल सके।

(4) Dairy complex की पार्कों का Development बहुत जरूरी है ward में जो main Roads हैं उन पर पौधारोपण किया जाना आवश्यक है।

(5) Budda नाला के लिये जो Project पास हो रहे हैं कृपया उसके लिये ward councillors को भागत किया जाये, तथा Budda नाला को साफ किया जाये।

KULDEEP JANDA
Councillor Ward No.14
M.C. LUDHIANA 19/2/20

DAIRY COMPLEX

ATTENDENCE SHEET

Punjab Urban Governance and Water Supply Improvement Project

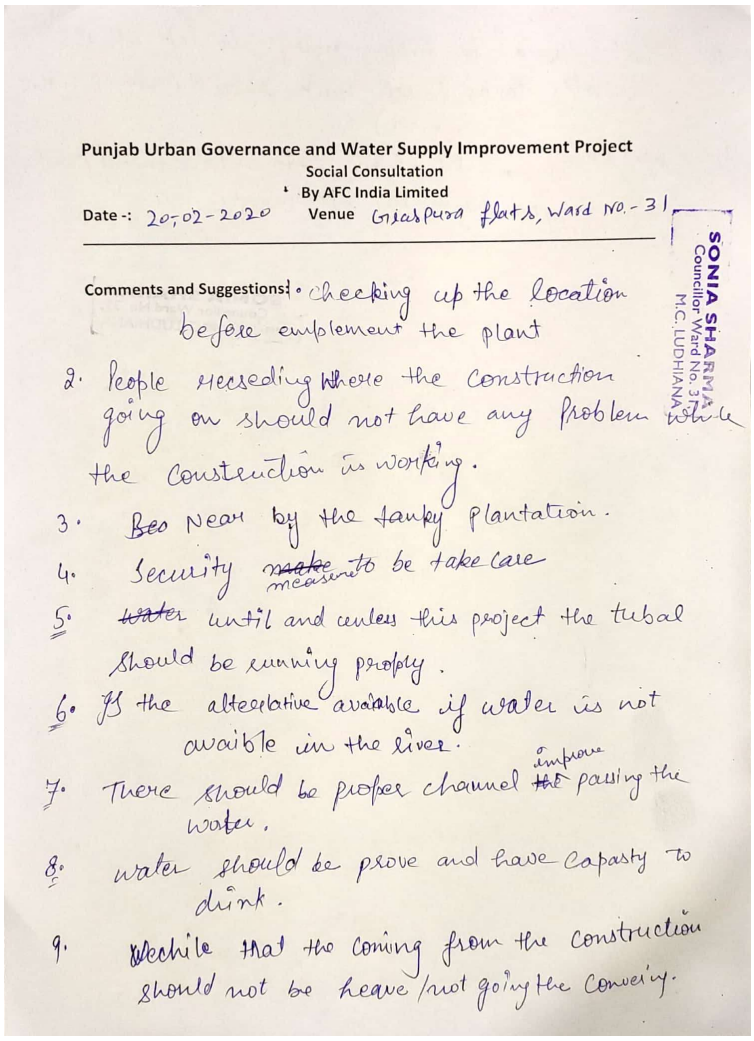
Social Consultation

By AFC India Limited

Date -: 19/02/2020 Location :- Dairy Complex, Tajpur road

Sr. No.	Name	Phone No	Sign.	Remarks
1.	KULDEEP JANDA	98781-45000	[illegible]	
2.	Raman			
3.	Gurcharn Singh.	9855767000	[illegible]	
4.	Pardeep			
5.	Rakesh.	7033423103	[illegible]	
6.	Manjinder Singh	9357355055	[illegible]	
7.	Rohit Sonkar	8968777442	Rohit Sonkar	
8.	RitESh KUMAR.	79866 88635	[illegible]	
9.	Bupindr Pal Singh	9810155103	[illegible]	
10.	ROHIT SANKAR	9988957311	[illegible]	
11.	Shama [illegible]	[illegible]	[illegible]	
12.	Gurvinder Kaur	9780790991	[illegible]	
13.	Neelam	8729035505	[illegible]	
14.	Priya verma	98761 74187	[illegible]	

DAIRY COMPLEX



Punjab Urban Governance and Water Supply Improvement Project

Social Consultation

By AFC India Limited

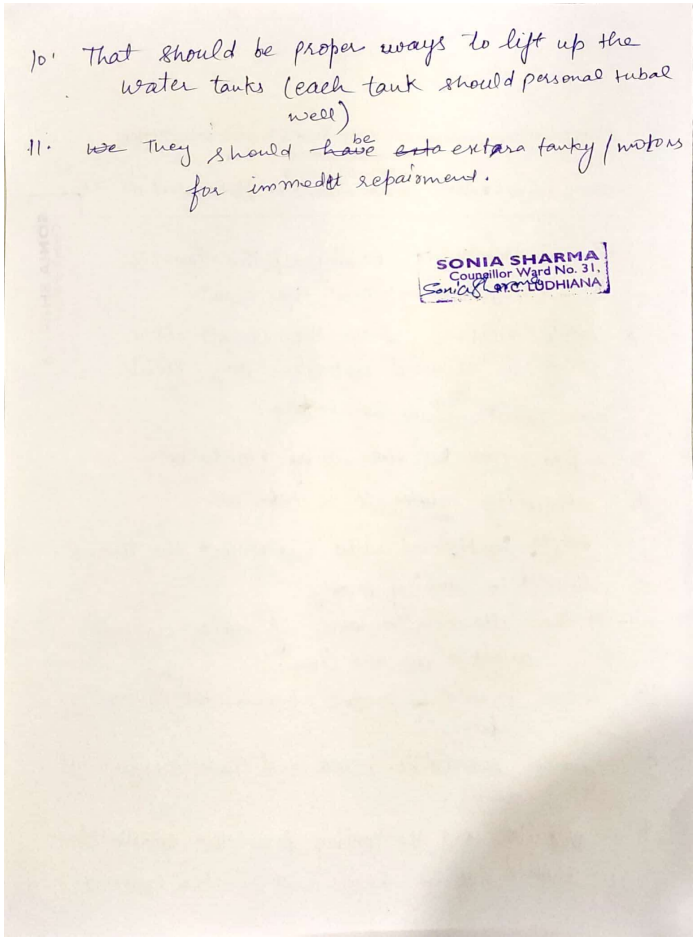
Date -: 20-02-2020 Venue Giaspura flats, Ward no. - 31

SONIA SHARMA
Councillor Ward No. 31
M.C. LUDHIANA

Comments and Suggestions:

1. Checking up the location before emplement the plant
2. People mecseding where the construction going on should not have any problem while the Construction is working.
3. ~~Bee~~ Near by the tanky plantation.
4. Security ~~make~~ measure to be take care
5. ~~water~~ until and unless this project the tubal should be running proply.
6. Is the alteerative available if water is not availble in the river.
7. There should be proper channel ~~the~~ improve passing the water.
8. water should be prove and have capasty to drink.
9. Vechile that the coming from the construction should not be heave /not going the Conveing.

GIASPURA FLATS



10. That should be proper ways to lift up the water tanks (each tank should personal tubal well)

11. ~~We~~ They should ~~have~~ be ~~ete~~ extara tanky / motors for immedit repairment.

SONIA SHARMA
Councillor Ward No. 31,
M.C. LUDHIANA

GIASPURA FLATS

ATTENDENCE SHEET

Punjab Urban Governance and Water Supply Improvement Project

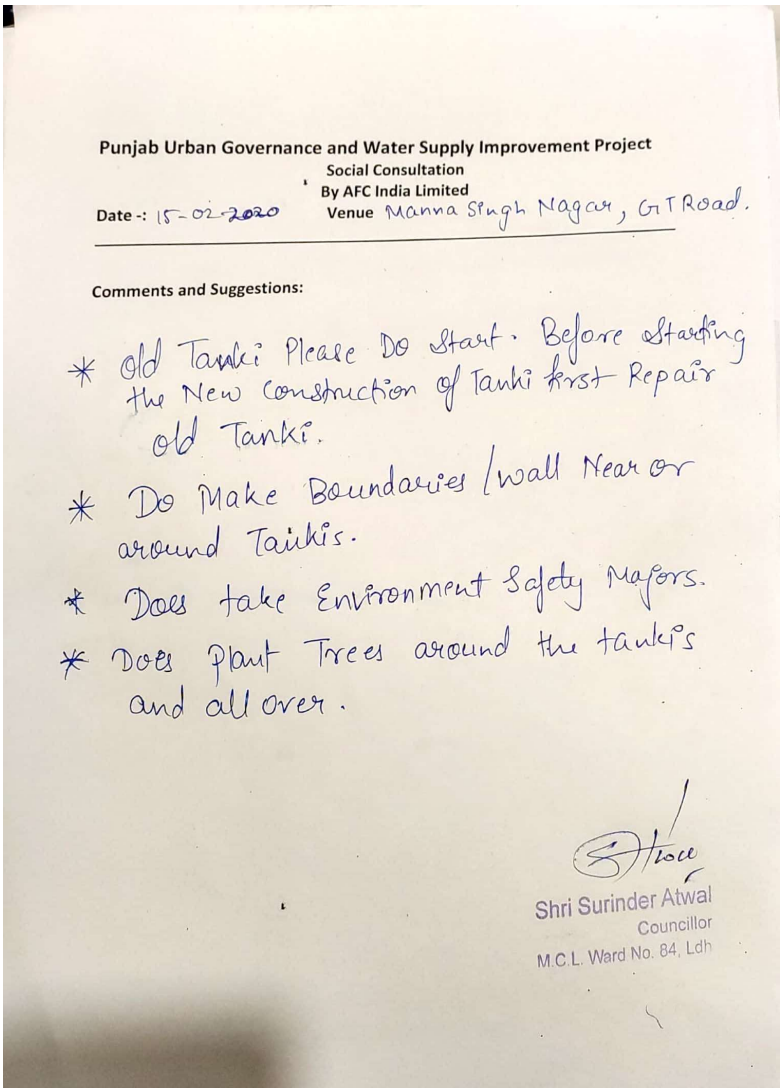
Social Consultation

By AFC India Limited

Date :- 20-02-2020 Location :- Giaspura flats, ward no.-31

Sr. No.	Name	Phone No	Sign.	Remarks
1.	Sukhvir Pal Singh	7973984441		
2.	Surinderpreet	98142-56287		
3.	Ashwani Kumar	98154-93154		
4.	Balwant Singh	94179 20045		
5.	Meeta	99145 10962		
6.	Lakhwinder Singh	99142-44759		
7.	KAPIL	6239673756		
8	Sukhwinder singh	7589124589		
9	Gurdev Singh	97818 13764		
10.	Parminder Kumar	99887-00855		
11	Bindu	62390 44044		
12	Pinky	8837782016		
13	Pankaj	9878607489		
14	Jagdish	70097-08753		
		95698 15041		

GIASPURA FLATS



Punjab Urban Governance and Water Supply Improvement Project

Social Consultation
By AFC India Limited

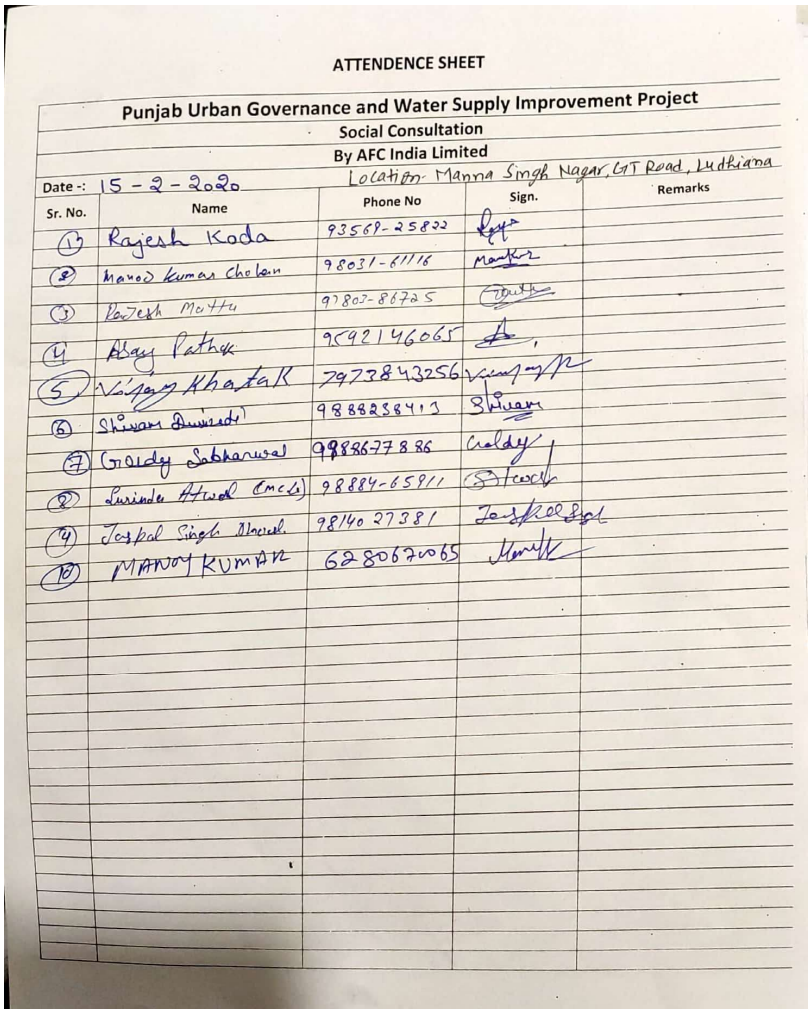
Date -: 15-02-2020 Venue Manna Singh Nagar, GT Road.

Comments and Suggestions:

* Old Tanki Please Do Start. Before starting the New Construction of Tanki first Repair old Tanki.
* Do Make Boundaries / wall Near or around Tankis.
* Does take Environment Safety Majors.
* Does Plant Trees around the tanki's and all over.

Shri Surinder Atwal
Councillor
M.C.L. Ward No. 84, Ldh

MANNA SINGH NAGAR



ATTENDENCE SHEET

Punjab Urban Governance and Water Supply Improvement Project

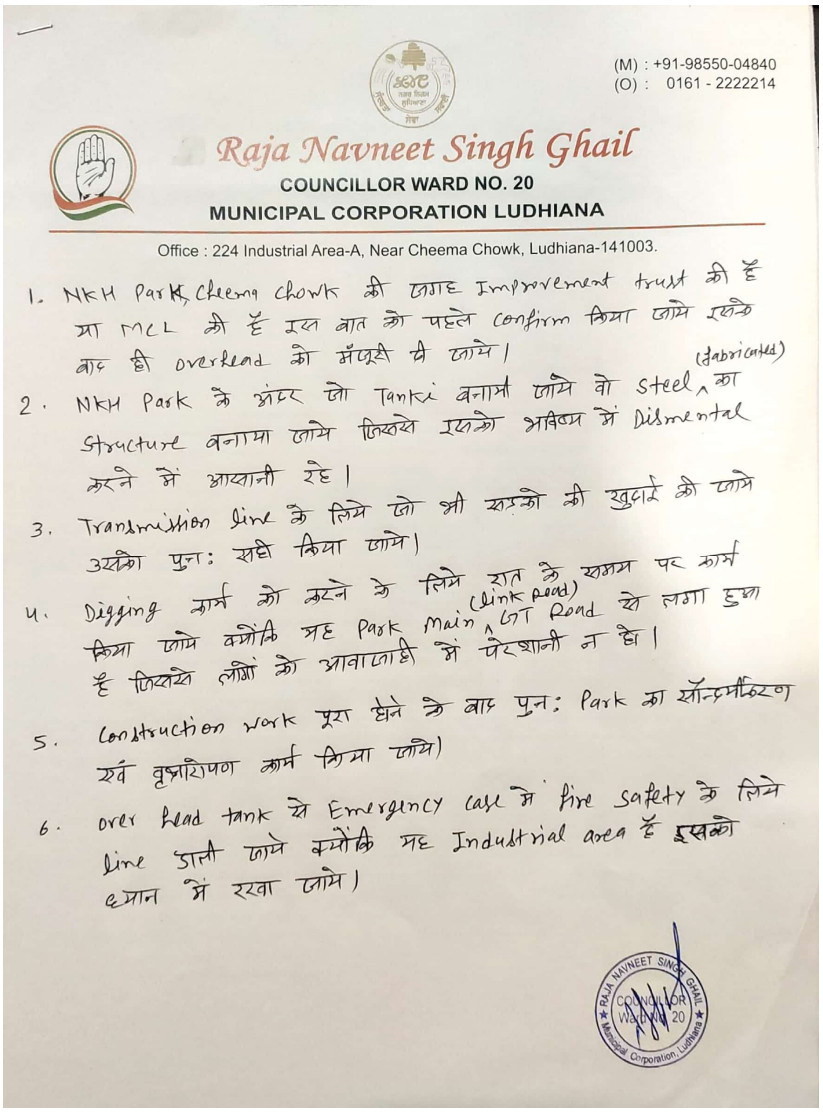
Social Consultation

By AFC India Limited

Date -: 15 - 2 - 2020 Location- Manna Singh Nagar, GT Road, Ludhiana

Sr. No.	Name	Phone No	Sign.	Remarks
1	Rajesh Koda	93568-25822		
2	Manoj kumar Chokra	98031-81116		
3	Rajesh Mutta	97802-88725		
4	Ajay Pathak	9592146065		
5	Vijay Khatak	7973843256		
6	Shivam Dwivedi	9888238413		
7	Goldy Sabharwal	9888677886		
8	Surinder Attwal (Mc's)	98884-65911		
9	Jaspal Singh Wadhwa	98140 27381		
10	MANOJ KUMAR	6280670065		

MANNA SINGH NAGAR



(M) : +91-98550-04840
(O) : 0161 - 2222214

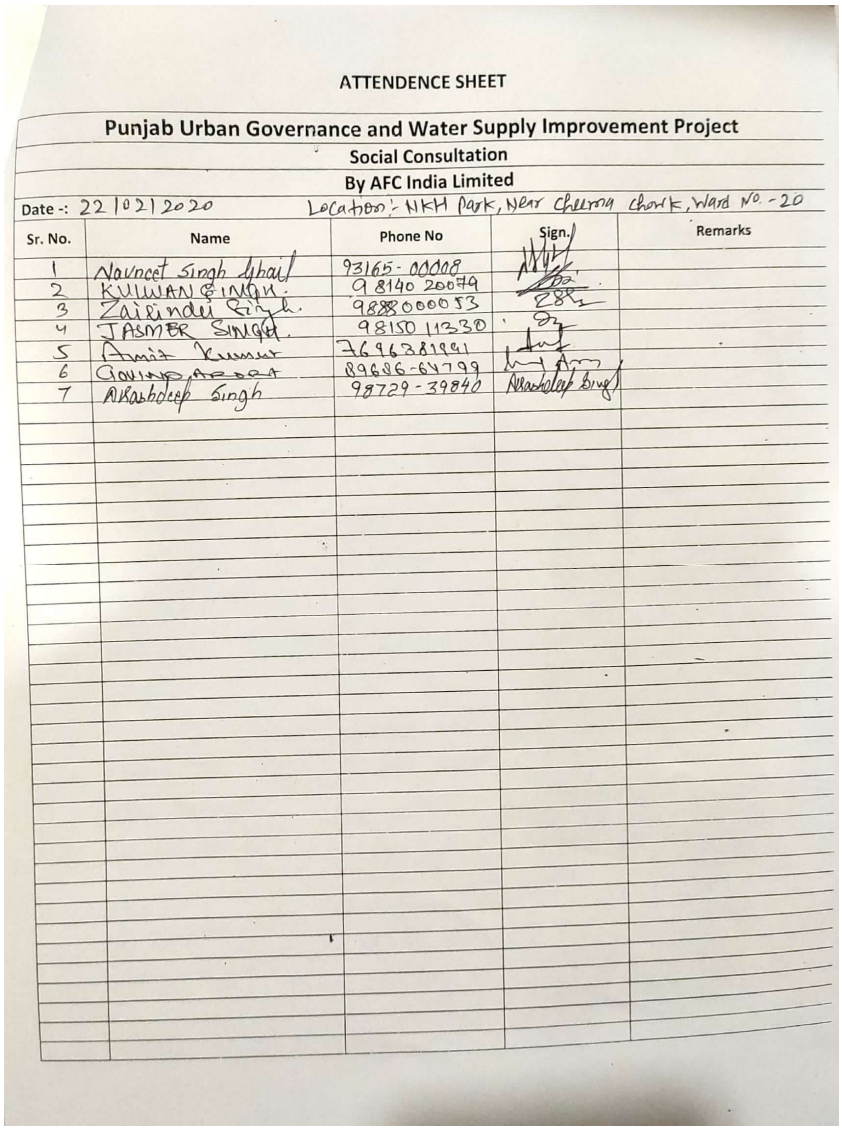
Raja Navneet Singh Ghail
COUNCILLOR WARD NO. 20
MUNICIPAL CORPORATION LUDHIANA

Office : 224 Industrial Area-A, Near Cheema Chowk, Ludhiana-141003.

1. NKH Park, Cheema Chowk की लाइट Improvement trust की है या MCL की है इस बात को पहले confirm किया जाये इसके बाद ही overhead को मंजूरी दी जाये।
2. NKH Park के अंदर जो Tanki बनायी जाये वो steel (fabricated) का Structure बनाया जाये जिससे इसको भविष्य में Dismental करने में आसानी रहे।
3. Transmission line के लिये जो भी खम्बो की खुदाई की जाये उसको पुनः सही किया जाये।
4. Digging कार्य को करने के लिये रात के समय पर कार्य किया जाये क्योंकि यह Park main (link road) GT Road से लगा हुआ है जिससे लोगों को आवाजाही में परेशानी न हो।
5. Construction work पूरा होने के बाद पुनः Park का सौन्दर्यीकरण एवं वृक्षारोपण कार्य किया जाये।
6. over head tank से Emergency case में fire safety के लिये line डाली जाये क्योंकि यह Industrial area है इसको ध्यान में रखा जाये।

RAJA NAVNEET SINGH GHAIL COUNCILLOR Ward No. 20 Municipal Corporation, Ludhiana

NKH PARK CHEEMA CHOWK



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Punjab Urban Governance and Water Supply Improvement Project

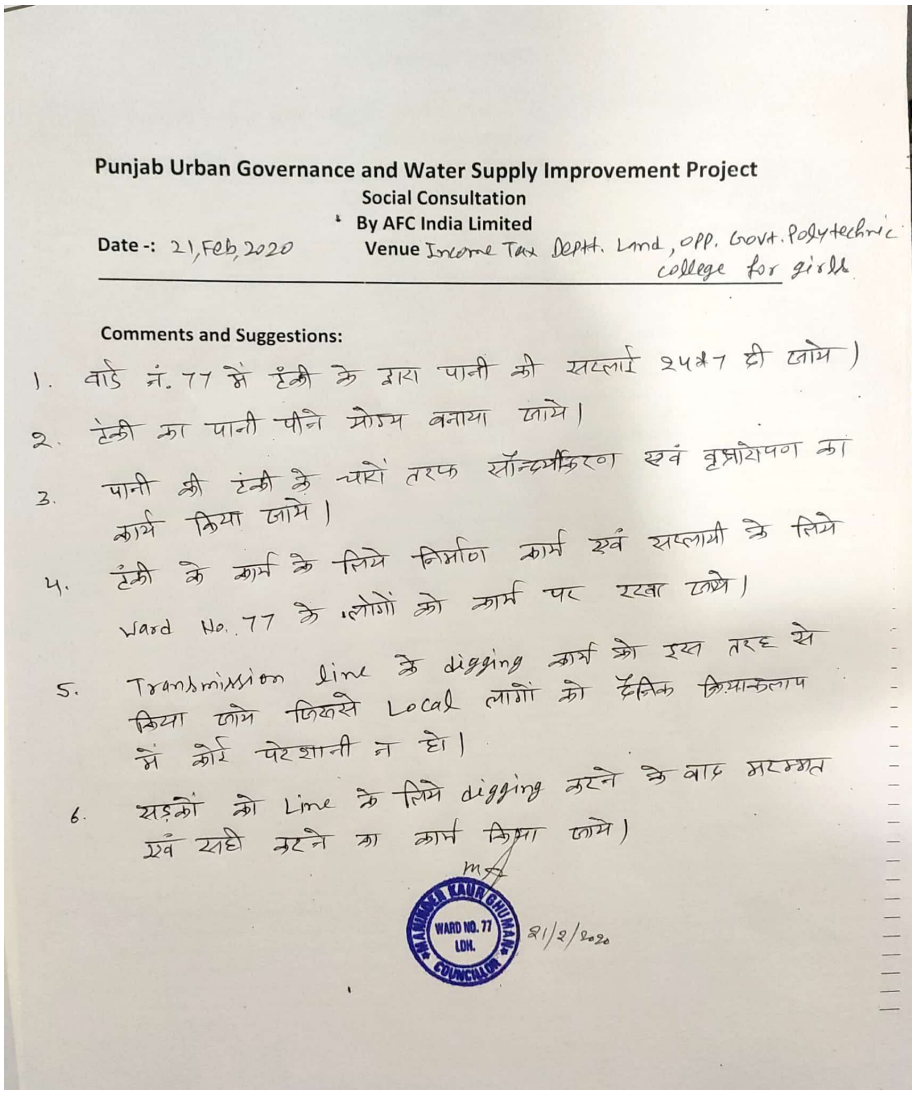
Social Consultation

By AFC India Limited

Date -: 22/02/2020 Location: NKH Park, Near Cheema Chowk, Ward No. -20

Sr. No.	Name	Phone No	Sign.	Remarks
1	Navneet Singh Ghai	93165-00008		
2	KULWANT SINGH.	98140 20079		
3	Zaildar Singh.	9888000053		
4	JASMER SINGH.	98150 11330		
5	Amit Kumar	76963819[illegible]		
6	Govind[illegible]	89686-64799		
7	Akashdeep Singh	98729-39840	Akashdeep Singh	

NKH PARK CHEEMA CHOWK



Punjab Urban Governance and Water Supply Improvement Project

Social Consultation

By AFC India Limited

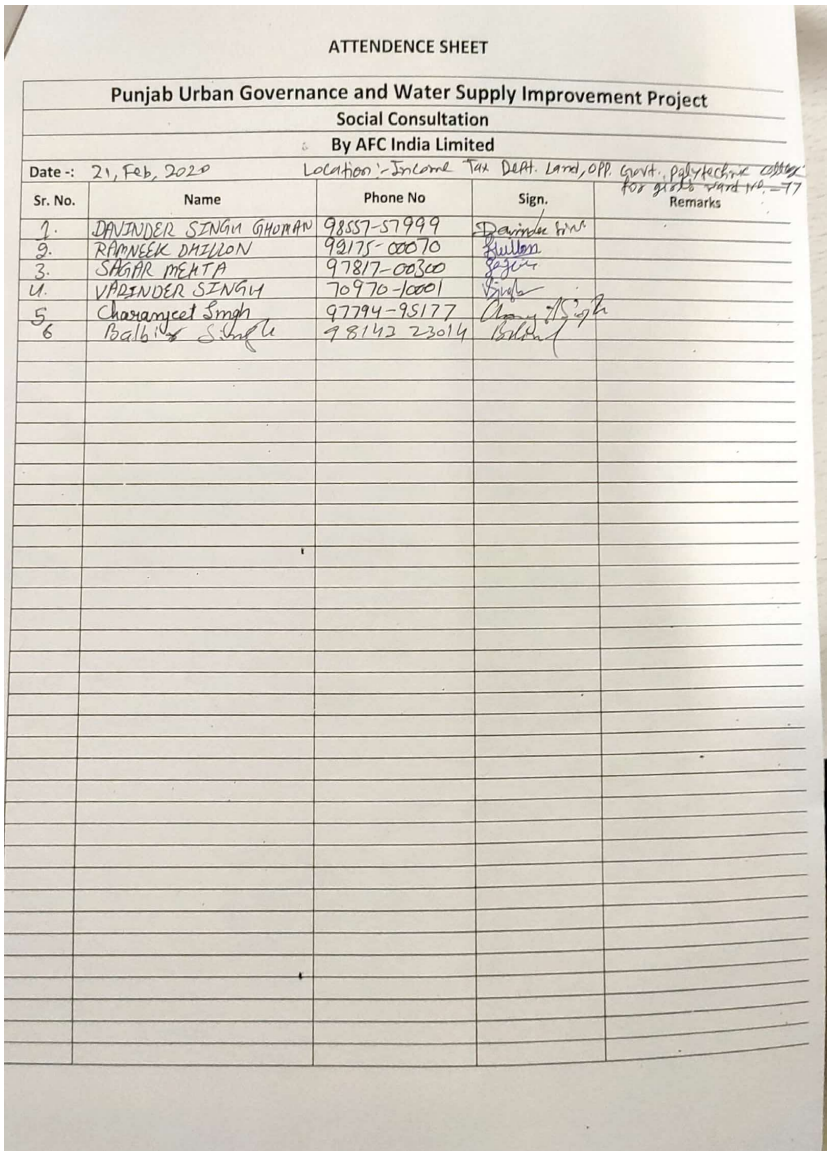
Date -: 21, Feb, 2020 **Venue** Income Tax Deptt. Land, opp. Govt. Polytechnic college for girls

Comments and Suggestions:

1. वार्ड नं. 77 में टंकी के द्वारा पानी की सप्लाई 24x7 दी जाये।
2. टंकी का पानी पीने योग्य बनाया जाये।
3. पानी की टंकी के चारों तरफ सौन्दर्यीकरण एवं वृक्षारोपण का कार्य किया जाये।
4. टंकी के कार्य के लिये निर्माण कार्य एवं सप्लाई के लिये Ward No. 77 के लोगों को कार्य पर रखा जाये।
5. Transmission line के digging कार्य को इस तरह से किया जाये जिससे Local लोगों को दैनिक क्रियाकलाप में कोई परेशानी न हो।
6. सड़कों को Line के लिये digging करने के बाद मरम्मत एवं सही करने का कार्य किया जाये।

WARD NO. 77 LDH. 21/2/2020

INCOME TAX DEPARTMENT LAND OPPOSITE GOVERNMENT POLYTECHNIC COLLEGE FOR GIRLS



ATTENDENCE SHEET

Punjab Urban Governance and Water Supply Improvement Project

Social Consultation

By AFC India Limited

Date -: 21, Feb, 2020 Location :- Income Tax Deptt. Land, OPP. Govt. polytechnic college for girls Patiala

Sr. No.	Name	Phone No	Sign.	Remarks
1.	DAVINDER SINGH GHUMAN	98557-57999	Davinder Singh	
2.	RAMNEEK DHILLON	99175-00070	Dhillon	
3.	SAGAR MEHTA	97817-00300	Sagar	
4.	VARINDER SINGH	70970-10001	Singla	
5	Charanjeet Singh	97794-95177	Charanjeet Singh	
6	Balbir Singh	98142 23014	Balbir	

INCOME TAX DEPARTMENT LAND OPPOSITE GOVERNMENT POLYTECHNIC COLLEGE FOR GIRLS

PHOTOGRAPHS OF COMMUNITY CONSULTATIONS


Basant Park


Manna Singh Nagar, Ludhiana 15/02/2020

Nehru Rose Garden, Ludhiana 18/02/2020


M Block Park, Ludhiana 19/02/2020

Gyaspura Flats, Ward 31, Ludhiana 20/02/2020